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A Guide to the EU Active Implantable Medical Devices Directive

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ABSTRACT

This guide (prepared under contract by Helen Delaney and Rene van de Zande, DVZ Joint Ventures) is an easy-to-use introductory reference for industry and government officials on the requirements of the European Union's (EU) Active Implantable Medical Devices Directive (AIMD) [90/385/EEC]. It is designed to help business and government officials understand the purpose of the directive, its relationship to other directives, the essential requirements contained in the directive, and the basic steps necessary for compliance. The guide offers explanations of such requirements as: the products covered by the directive, the products excluded from coverage under the directives, and issues regarding device classification and the use of standards. The guide contains the text of the directive and a list of applicable standards. The guide also references appropriate sections of *NIST Special Publication 951: A Guide to EU Standards and Conformity Assessment* for further information on some of the generic conformity assessment concepts and requirements of the EU's New Approach.

Key Words: AIMD; active implantable medical devices; CEN; CENELEC; conformity assessment; device classification; directives; European Union; implants; medical devices; New Approach directives; pharmaceuticals; surgical implants; technical construction files; user manuals

Contents

The Active Implantable Medical Devices Directive[1][2][3]

Directive 90/385/EEC
In force since January 1993 and mandatory as of January 1995

To Be Considered:

- *The Active Implantable Medical Devices Directive (AIMD) is not applicable to the following products:*

  - *Medical Devices(covered by Directive 93/42/EEC) (See also NIST GCR 815); and*
  - *Medicinal Products (covered by Directive 65/65/EEC).*

- *Although active implantable devices must meet the Essential Requirements of the Directive, two groups of active implantable devices are not required to bear the CE Marking: 1) active implantable devices which are intended for use in clinical investigations, and 2) custom-made active implantable devices. (See Article 9 of the Directive.)*

- *Other exceptions to the requirement for applying CE Marking:* See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 19.*

- *This Directive has been partially amended by Directive 93/42/EEC , the Medical Device Directive, and Directive 93/68/EEC, the CE Marking Directive. **T**he amendments are incorporated in**to** the body of the official text of the Active Implantable Medical Devices Device Directive. The amendments introduced by Directive 93/42/EEC are indicated in bold. The amendments following Directive 93/68/EEC are in italics. In case of doubt, the original text of the relevant Directive should be consulted.*

- *The electrical and electromagnetic safety aspects of active implantable medical devices are covered in the AIMD.*

- *Where an active implantable medical device is intended to administer a substance defined as a medicinal product within the meaning of Council Directive 65/65/EEC of 26 January 1965 on the approximation of provisions laid down by law, regulation or administrative action relating to proprietary medicinal products(6), as last amended by Directive*

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[1] An active Implantable Medical Device is: **"**any active medical device which is intended to be totally or partially introduced, surgically or medically, into the human body or by medical intervention into a natural orifice, and which is intended to remain after the procedure."

[2] Readers of this report may wish to refer to NIST SP 951 *A Guide to EU Standards and Conformity Assessment,* which is available on NIST's website at: http://ts.nist.gov/ca.

[3] For additional information on medical devices and in vitro diagnostic medical devices, see NIST GCR 01-815 *A Guide to the EU Medical Device Directive* and NIST 01-817 *A Guide to the EU In vitro Diagnostic Medical Devices Directive.*

*87/21/EEC(7), that substance shall be subject to the system of marketing authorization provided for in that Directiv*e.

- *Where an active implantable medical device incorporates, as an integral part, a substance which, if used separately, may be considered to be a medicinal product within the meaning of Article 1 of Directive 65/65/EEC, that device must be evaluated and authorized in accordance with the provisions of this Directive.*

Purpose of the Active Implantable Medical Devices Directive

The purpose of the Active Implantable Medical Devices Directive (AIMD) is to harmonize the regulations and administrative provisions among the member states of the European Economic Area (EEA) and ensure the safety, health, protection, and performance characteristics of implantable medical devices. (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 1.)*

The format of the Directive is similar to that of the *Medical Device* and *In vitro Diagnostic Medical Devices Directives.* (See also NIST GCR 01-815 and NIST GCR 01-817.) It consists of a number of Articles which cover definitions, scope, free movement, standards, and vigilance. These are followed by annexes covering Essential Requirements, conformity assessment procedures, and classification criteria.

Active implantable medical devices are treated by the law as a subset of medical devices. Because they represent a high risk for the patient, these devices must meet stringent safety requirements.

Before a Manufacturer can place the CE Marking (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 17)* on an active implantable medical device and legally sell to, or within the EEA, it must be in compliance with the Active Implantable Medical Devices Directive.

Basic Steps to Compliance

I. Determining Whether or Not the Product Has To Comply with the AIMD
II. Classification of the AIMD
III. Conformity Assessment Routes
IV. Compliance with the Essential Requirements of the Directive
V. Harmonized Standards

VI. Risk Analysis
VII. Technical File
VIII. Authorized Representative and Competent Authority Registration
IX. Vigilance System
X. CE Marking
XI. Declaration of Conformity

I. Determining Whether or Not the Product Has To Comply with the Active Implantable Medical Devices Directive

The Active Implantable Medical Devices Directive applies to devices and their accessories. The AIMD covers implantable products such as cardiac pacemakers, defibrillators, infusion pumps, diaphragm stimulators, bladder stimulators, and neurostimulators. In addition, the Directive covers accessories and software such as image-enhancing software intended for diagnostic purposes.

"Active" implies that the function of these devices is dependent upon a source of electrical energy.

The first step is to determine whether or not the product is within the scope of the AIMD based on the following definition:

- An active Implantable Medical Device (see *Article 1* of the AIMD) is **"** any active medical device which is intended to be totally or partially introduced, surgically or medically, into the human body or by medical intervention into a natural orifice, and which is intended to remain after the procedure."

II. Classification of the Active Implantable Medical Device

If an active implantable medical device is within the scope of the Active Implantable Medical Devices Directive, the Manufacturer must determine the conformity assessment route, outlined in the Annexes of the AIMD. Self-certification does not apply to active implantable medical devices. They all require the intervention of a Notified Body. *(*See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 20.)*

III. Conformity Assessment Route

To demonstrate compliance with the Essential Requirements (*Annex I*), the Manufacturer must use a conformity assessment route appropriate to the device. Conformity assessment routes are detailed in the relevant Annexes of the Directive, and are outlined below.

The classification of the device will decide the conformity assessment route.

Annex II, Full Quality Assurance
Annex III, EC Type Examination
Annex IV, EC Verification (Full Product or Batch Examination)
Annex V, Production Quality Assurance

IV. Compliance with the Essential Requirements of the Directive

The Essential Requirements of the AIMD are contained in *Annex I* of the Directive. They describe, in a general way, the safety objectives of the Directive; and compliance, where applicable, is mandatory.

The Essential Requirements in *Annex I* are divided into general requirements and specific requirements that relate to the design, construction and information that must be supplied by the Manufacturer on the label and in the instructions for use.

Issues addressed with regard to design and construction include: chemical, physical and biological properties; infection and microbial contamination; construction and environmental properties.

User Instructions and Labelling

Where appropriate, this information may take the form of symbols and pictograms. Any symbol used, however, must conform to the relevant Harmonized Standards. (See *Guide to EU Standards and Conformity Assessment, Page 10)*. Where no standards exist, symbols and the significance of colors must be described in the documentation supplied with the device.

Implantable devices must be designed, manufactured and packed in a non-reusable pack according to the appropriate procedures to ensure that they are sterile when placed on the market and, in the storage and transport conditions stipulated by the Manufacturer, remain so until the packaging is removed and they are implanted.

Devices must bear a code by which the devices and their Manufacturer can be unequivocally identified (particularly with regard to the type of device and year of manufacture) It must be possible to read this code, if necessary, without the need for a surgical operation. ????

Labelling

The label of an immediate container must bear the following particulars:

On the sterile pack:

- the method of sterilization,;
- an indication permitting this packaging to be recognized as such;
- the name or trade name and address of the Manufacturer. If the Manufacturer is not established in the European Union, the name and address of the Authorized Representative of the Manufacturer established within the European Union must also be listed;
- a description of the device;
- if the device is intended for clinical investigations, the words: "exclusively for clinical investigations;"
- if the device is custom-made, the words "custom-made device;"
- a declaration that the implantable device is in a sterile condition;
- the month and year of manufacture; and
- an indication of the time limit for implanting a device safely.

On the sales packaging:

- the name or trade name and address of the Manufacturer. If the Manufacturer is not established in the European Union, the name and address of the Authorized Representative of the Manufacturer established within the European Union must also be listed;
- a description of the device;
- the purpose of the device;
- the relevant characteristics for its use;
- if the device is intended for clinical investigations, the words: "exclusively for clinical investigations;"
- if the device is custom-made, the words: "custom-made device;"
- a declaration that the implantable device is in a sterile condition;
- the month and year of manufacture;
- an indication of the time limit for implanting a device safely; and
- the conditions for transporting and storing the device.

Instructions for use

Each active implantable device must be accompanied by instructions for use giving the following particulars:

- the year of authorization to affix the CE Marking (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 17*);
- the performances referred to in section 2 of Annex I and any undesirable side effects;
- information allowing the physician to select a suitable device and the corresponding software and accessories;
- information constituting the instructions for use allowing the physician and, where appropriate, the patient to use the device, its accessories and software correctly, as well as information on the nature, scope and times for operating controls and trials and, where appropriate, maintenance measures;

- information allowing, if appropriate, certain risks in connection with implantation of the device to be avoided;
- information regarding the risks of reciprocal interference (i.e., adverse effects on the device caused by instruments present at the time of investigations or treatment and vice versa) in connection with the presence of the device during specific investigations or treatment,;
- the necessary instructions in the event of the sterile pack being damaged and, where appropriate, details of appropriate methods of re-sterilization; and
- an indication, if appropriate, that a device can be reused only if it is reconditioned under the responsibility of the Manufacturer to comply with the Essential Requirements.

The instruction leaflet must also include details allowing the physician to brief the patient on the contra-indications and the precautions to be taken. These details should cover in particular:

- information allowing the lifetime of the energy source to be established;
- precautions to be taken should changes occur in the device's performance;
- precautions to be taken as regards exposure, in reasonably foreseeable environmental conditions, to magnetic fields, external electrical influences, electrostatic discharge, pressure or variations in pressure, acceleration, etc.; and
- adequate information regarding the medicinal products which the device in question is designed to administer.

V. European Harmonized Standards

Since the Active Implantable Medical Devices Directive lays down Essential Requirements in very general terms, standards can be important guides to the Manufacturer. Standards interpret the safety objectives and also provide the technical route to compliance.

While compliance with the Essential Requirements of the Active Implantable Medical Devices Directive is mandatory, the use of Active Implantable Medical Device Harmonized Standards is voluntary. However, the Directive instructs the Manufacturer in the order in which standards are most likely to assure compliance.

A. Harmonized Standards

The most direct route to compliance through standards is the use of *Active Implantable Medical Device Harmonized Standards*. (See list of Harmonized Standards at the end of this report.) A Manufacturer who uses Active Implantable Medical Device Harmonized Standards in the design and production of devices is presumed in conformity with the Essential Requirements of the Directive. (*See NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 11.*) The use of Harmonized Standards is the most direct route to compliance with any New Approach Directive.

B. International Standards

Where no Harmonized Standards exist, Manufacturers are instructed to use standards that emanate from international standards developing organizations such as the ISO and IEC. (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 16.*.

C. National Standards

The third best choice of the Directive is the use of European National Standards, to be used when no Harmonized Standards or International Standards exist.

The principle of applying standards, therefore, is the following:

Active Implantable Device Harmonized Standards that have been developed specifically to deal with the Essential Requirements of the Active Implantable Medical Devices Directive provide an assumption of conformity. (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 11.*) In their absence, the Manufacturer is entitled to comply with any appropriate specifications that may demonstrate conformity with the safety objectives, or the Essential Requirements of the Directive. However, the Manufacturer must bear the burden of proving that the use of specifications (other than Active Implantable Medical Device Harmonized Standards) brings the product into conformity with the Essential Requirements.

Note: Active Implantable Medical Device Harmonized Standards take on a presumption of conformity when they are developed by one of the European Standards Bodies (See NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 10) and published in the Member States as transformed national standards. They are published in the Official Journal of the European Communities for information only. In other New Approach Directives, publication in Official Journal of the European Communities is a condition of presumption of conformity.

VI. Risk Analysis

One of the Essential Requirements of the Active Implantable Medical Devices Directive is that the Manufacturer is required to conduct a risk assessment (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 25)* of the product.

The European Committee for Standardization (CEN) (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 10*) has developed standard EN 1441 which addresses the elements of risk analysis that are related to medical devices, including active implantable medical devices.

EN 1441 consists of nine steps:

- Identifying the product and describing the intended use;
- Identifying characteristics which could affect safety;

- Identifying possible hazards;
- Estimating the risk for each hazard for both normal conditions and in the event of failure;
- Determining whether the risk is acceptable;
- Determining whether the risk can be reduced;
- If a risk is reduced (for example by a change in design), determining if other hazards have been generated;
- Evaluating all identified hazards; and
- Determining if the device safety is adequate.

The Manufacturer must follow these steps and provide the relevant documentation accordingly.

VII. Technical File

The Manufacturer must compile a Technical File. (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 24.*) This file must contain all the relevant information that is needed to demonstrate that the product meets the essential health and safety requirements of the Active Implantable Medical Devices Directive. The required contents of the Technical File are set out in *Annex II*.

The Manufacturer or his Authorized Representative must make this documentation, including the Declaration of Conformity, available to the Surveillance Authorities (See *A Guide to EU Standards and Conformity Assessment, Page 23*) for inspection purposes for a period ending at least five years after the last product has been manufactured.

Where neither the Manufacturer nor his Authorized Representative are established in the Community, this obligation to keep the technical documentation available falls to the person(s) who place(s) the product on the Community market.

The technical documentation must include:

- a general description of the product, including any variants planned;
- design drawings, methods of manufacture envisaged and diagrams of components, sub-assemblies, circuits, etc.;
- the descriptions and explanations necessary to understand the above-mentioned drawings and diagrams and the operations of the product;
- the results of the risk analysis and a list of the standards applied in full or in part, and descriptions of the solutions adopted to meet the Essential Requirements of the Directive if Harmonized Active Implantable Medical Device Standards have not been applied in full;
- in the case of products placed on the market in a sterile condition, description of the methods used;
- the results of the design calculations and of the inspections carried out, etc.; if the device is connected to other device(s) in order to operate as intended, proof must be provided that it conforms to the Essential Requirements when connected to such device(s);
- the test reports and, where appropriate, clinical data in accordance with Annex VII; and

- the label and instructions for use.

VIII. Authorized Representative and Competent Authority Registration

The Active Implantable Medical Devices Directive requires the appointment of an Authorized Representative (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 23*) for Europe in the event the Manufacturer is not established within the EEA.

The Manufacturer will also have to register with the competent authority (a national Department (Ministry) of Health) of the Member State(s) in which he, or, if outside the EEA, his representative in the Community, has a place of business. The following information must be provided:

- name and address of registered place of business of Manufacturer or Authorized Representative;
- information relating to reagents, reagents products and calibration and control materials and any significant changes and discontinuation of placing on the market;
- appropriate indications relating to kits, instruments, apparatus, equipment or systems;
- for *Annex II* and self-test products all data allowing for the identification, the analytical and where appropriate, diagnostic parameters, the outcome of performance evaluations, certificates and any changes and discontinuation of placing on the market; and
- notification of "new" devices.

The Directive requires that the Authorized Representative be listed on the label and/or packaging, and in the Instructions and on the Declaration of Conformity.

In addition, the Authorized Representative keeps the Technical File available for review by Competent Authorities, and plays an essential role in vigilance procedures.

IX. Vigilance system

The Manufacturer must institute and keep up-to-date a systematic procedure to review experience gained from devices in the post-production phase and to implement appropriate means to apply any necessary corrective actions.

A. Incidents to be reported by Manufacturer/Authorized Representative and users to Competent Authorities

Incidents are events which have led to a death or to a serious deterioration in the state of health of a patient, user, or other person.

A serious deterioration in the state of health can include:

- life-threatening illness or injury;
- permanent impairment of a body function or permanent damage to a body structure; or
- a condition necessitating medical or surgical intervention to prevent permanent impairment of a body function or permanent damage to a body structure.

Near Incidents are events which might lead to a death or a serious deterioration in health.

For example, an incident occurring as the result of an unfortunate circumstance or the intervention of health care personnel must also be reported.

It is sufficient that:

- an incident associated with a device happened, and
- the incident was such that, if it occurred again, it might lead to death or serious deterioration in health.

or

- an examination of the device or the information supplied with the device indicated some factor (e.g., a deterioration in characteristics or performance, or a shortcoming in the information) which could lead to an incident involving death or serious deterioration of health;

For a near incident to be reported, a possible direct link with the device, or with shortcomings in the information supplied, should be clearly established.

In assessing the link between the device and the incident or near incident, the Manufacturer should take into account:

- the opinion of health-care professionals, based on valid evidence;
- the results of the Manufacturer's own preliminary assessment of the incident;
- evidence of previous, similar incidents; and
- other evidence held by the Manufacturer.

Malfunction Or Deterioration In The Characteristics And/Or Performance Of A Device.

Malfunction or deterioration is a failure of a device to perform in accordance with its intended purpose when used in accordance with the Manufacturer's instructions.

A device which shows no malfunction or deterioration, but nevertheless has a characteristic which could lead to an incident should be reported as a "near incident."

B. Timescale For The Initial Reporting Of An Incident Or Near Incident

The times given below are the maximum elapsed times for determining the relevant facts and making an initial report.

The time runs from the distributor-Manufacturer/Authorized Representative first being informed of the incident, to the relevant Competent Authority receiving the notification from the Manufacturer.

INCIDENTS: 10 DAYS
NEAR INCIDENTS: 30 DAYS

X. CE marking

CE marking (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 17*)

The Manufacturer is obliged to place the CE Marking on the device. *Annex IX* of the Directive (as amended by *Directive 93/68/EEC*) instructs the Manufacturer on the placing of the CE Marking.

XI. Declaration of Conformity

Declaration of Conformity (See *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 26.*)

The Manufacturer must draw up a Declaration of Conformity and keep a copy with the technical file. *Annex II* of the Directive instructs the Manufacturer that the Declaration of Conformity must contain the following elements:

- name and address of the Manufacturer and / or his Authorized Representative established within the Community;
- product name of the device;
- reference to the applicable Directive
- reference to applied harmonized standards;
- where appropriate, references to the specifications with which conformity is declared; and
- identification of the signatory who has been empowered to enter into commitments on behalf of the Manufacturer or his Authorized Representative established within the Community.

For a sample Declaration of Conformity, see *NIST SP 951 A Guide to EU Standards and Conformity Assessment, Page 28*.

FOR ADDITIONAL INFORMATION, SEE THE TEXT OF THE DIRECTIVE WHICH FOLLOWS:

Note: This Directive is from the Web Site http://www.newapproach.org

COUNCIL DIRECTIVE
of 20 June 1990
on the approximation of the laws of the Member States relating to active implantable medical devices

(90/385/EEC - OJ L189 of 20 July 1990)

This consolidated text has been prepared by Commission services on the basis of the above Directives amending Directive 90/385/EEC. The amendments introduced by Directive 93/42/EEC are indicated in **bold**, the amendments following Directive 93/68/EEC are in *italic*. The consolidation has no official status. In case of doubt, the original text of the relevant Directive should be consulted.

January 1994

Amended by
Council Directive 93/42/EEC of 14 June 1993 (OJ L 169 of 12 July 1993) and
Council Directive 93/68/EEC of 22 July 1993 (OJ L 220 of 30 August 1993)

Council Directive 93/42/EEC 14 June 1993	Council Directive 93/68/EEC 22 July 1993
* Article 1(2), subparagraphs (h) and (I) are added * Article 9, paragraphs 5, 6, 7, 8, 9 are added * Article 9a is inserted after article 9 * Article 10, a subparagraph is added to paragraph 2 and paragraph 2a is inserted * Article 14, a last sentence is added	* Throughout the text, the term “EC mark” is replaced by “CE marking” * Article 4, first paragraph is replaced and a paragraph 5 is added * Article 11, first paragraph is replaced * Article 12(2), second subparagraph is replaced as well as third paragraph * Article 13 is totally replaced * Annex II, section 2, second paragraph is replaced and section 6 is replaced * Annex III, sections 7 and 8 are replaced * Annex IV is replaced * Annex V, second subparagraph of section 2 is replaced * Annex IX is replaced

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100a thereof,

Having regard to the proposal from the Commission(1),
In cooperation with the European Parliament(2),

Having regard to the opinion of the Economic and Social Committee(3),

Whereas in each Member State active implantable medical devices must give patients, users and other persons a high level of protection and achieve the intended level of performance when implanted in human beings;

Whereas several Member States have sought to ensure that level of safety by mandatory specifications relating both to the technical safety features and the inspection procedures for such devices; whereas those specifications differ from one Member State to another;

Whereas national provisions ensuring that safety level should be harmonized in order to guarantee the free movement of active implantable medical devices without lowering existing and justified levels of safety in the Member States;

Whereas harmonized measures must be distinguished from measures taken by Member States to manage the financing of public health and sickness insurance schemes directly or indirectly concerning such devices; whereas, therefore, such provisions do not affect the right of Member States to implement the abovementioned measures in compliance with Community law;

Whereas maintaining or improving the level of protection achieved in Member States constitutes one of this Directive's essential objectives as defined by the essential requirements;

Whereas rules governing active implantable medical devices can be confined to those provisions needed to satisfy the essential requirements; whereas, because they are essential, these req
uirements must replace corresponding national provisions;

Whereas, in order to facilitate proof of conformity with these essential requirements and to permit monitoring of that conformity, it is desirable to have Europe-wide harmonized standards in respect of the prevention of risks in connection with the design, manufacture and packaging of active implantable medical devices; whereas such standards harmonized at European level are drawn up by private-law bodies and must retain their status as non-mandatory texts; whereas, to that end, the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (Cenelec) are recognized as being the competent bodies to adopt harmonized standards in accordance with the general guidelines for cooperation between the Commission and these two bodies, signed on 13 November 1984; whereas, for the purposes of this Directive, a harmonized standard is a technical specification (European standard or harmonization document) adopted by either or both of these bodies, as instructed by the Commission pursuant to the provisions of Council Directive 83/189/EEC of 28 March 1983 laying down a procedure

for the provision of information in the field of technical standards and regulations(4), as last amended by Directive 88/182/EEC(5), and under the abovementioned general guidelines;

Whereas evaluation procedures have to be established and accepted by common accord between the Member States in accordance with Community criteria;
Whereas the specific nature of the medical sector makes it advisable to make provision for the notified body and the manufacturer or his agent established in the Community to fix, by common accord, the time limits for completion of the evaluation and verification operations for the conformity of devices,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive shall apply to active implantable medical devices.
2. For the purposes of this Directive, the following definitions shall apply:

(a) "medical device" means any instrument, apparatus, appliance, material or other article, whether used alone or in combination, together with any accessories or software for its proper functioning, intended by the manufacturer to be used for human beings in the:

- diagnosis, prevention, monitoring, treatment or alleviation of disease or injury,
- investigation, replacement or modification of the anatomy or of a physiological process,
- control of conception,

and which does not achieve its principal intended action by pharmacological, chemical, immunological or metabolic means, but which may be assisted in its function by such means;

(b) "active medical device" means any medical device relying for its functioning on a source of electrical energy or any source of power other than that directly generated by the human body or gravity;

(c) "active implantable medical device" means any active medical device which is intended to be totally or partially introduced, surgically or medically, into the human body or by medical intervention into a natural orifice, and which is intended to remain after the procedure;

(d) "custom-made device" means any active implantable medical device specifically made in accordance with a medical specialist's written prescription which gives, under his responsibility, specific design characteristics and is intended to be used only for an individual named patient;

(e) "device intended for clinical investigation" means any active implantable medical device intended for use by a specialist doctor when conducting investigations in an adequate human clinical environment;

(f) "intended purpose" means the use for which the medical device is intended and for which it is suited according to the data supplied by the manufacturer in the instructions;

(g) "putting into service" means making available to the medical profession for implantation.

(h) "placing on the market" means the first making available in return for payment or free of charge of a device other than a device intended for clinical investigation,

with a view to distribution and/or use on the Community market, regardless of whether it is new or fully refurbished

(i) "manufacturer" means the natural or legal person with responsibility for the design, manufacture, packaging and labelling of a device before it is placed on the market under his own name, regardless of whether these operations are carried out by that person himself or on his behalf by a third party.

The obligations of this Directive to be met by manufacturers also apply to the natural or legal person who assembles, packages, processes, fully refurbishes and/or labels one or more ready-made products and/or assigns to them their intended purpose as a device with a view to their being placed on the market under his own name. This subparagraph does not apply to the person who, while not a manufacturer within the meaning of the first subparagraph, assembles or adapts devices already on the market to their intended purpose for an individual patient.

3. Where an active implantable medical device is intended to administer a substance defined as a medicinal product within the meaning of Council Directive 65/65/EEC of 26 January 1965 on the approximation of provisions laid down by law, regulation or administrative action relating to proprietary medicinal products(6), as last amended by Directive 87/21/EEC(7), that substance shall be subject to the system of marketing authorization provided for in that Directive.

4. Where an active implantable medical device incorporates, as an integral part, a substance which, if used separately, may be considered to be a medicinal product within the meaning of Article 1 of Directive 65/65/EEC, that device must be evaluated and authorized in accordance with the provisions of this Directive.

5. This Directive constitutes a specific Directive within the meaning of Article 2 (2) of Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility(8).

Article 2

Member States shall take all necessary steps to ensure that the devices referred to in Article 1 (2) (c) and (d) may be placed on the market and put into service only if they do not compromise the safety and health of patients, users and, where applicable, other persons when properly implanted, maintained and used in accordance with their intended purposes.

Article 3

The active implantable medical devices referred to in Article 1 (2) (c), (d) and (e), hereinafter referred to as 'devices', must satisfy the essential requirements set out in Annex 1, which shall apply to them account being taken of the intended purpose of the devices concerned.

Article 4

1. Member States shall not prevent the placing on the market or the putting into service within their territory of devices complying with the provisions of this Directive and bearing the CE marking provided for in Article 12 which indicate that they have been the subject of an evaluation of their conformity in accordance with Article 9.

2. Member States shall not create any obstacles to:

- devices intended for clinical investigations being made available to specialist doctors for that purpose if they satisfy the conditions laid down in Article 10 and in Annex 6,
- custom-made devices being placed on the market and put into service if they satisfy the conditions laid down in Annex 6 and are accompanied by the statement referred to in that Annex.

These devices shall not bear the CE marking.

3. At trade fairs, exhibitions, demonstrations, etc., Member States shall not prevent the showing of devices which do not conform to this Directive, provided that a visible sign clearly indicates that such devices do not conform and cannot be put into service until they have been made to comply by the manufacturer or his authorized representative established within the Community.

4. When a device is put into service, Member States may require the information described in sections 13, 14 and 15 of Annex 1 to be in their national language(s).

5. Where the devices are subject to other Directives concerning other aspects and which also provide for the affixing of the CE marking, the latter shall indicate that the devices are also presumed to conform to the provisions of the other Directives.

However, where one or more of these Directives allow the manufacturer, during a transitional period, to choose which arrangements to apply, the CE marking shall indicate conformity to the provisions only of those Directives applied by the manufacturer. In this case, particulars of the Directives applied, as published in the Official Journal of the European Communities, must be given in the documents, notices or instructions required by the Directives and accompanying such devices; these documents, notices or instructions shall be accessible without it being necessary to destroy the packaging which keeps the device sterile.

Article 5

Member States shall presume compliance with the essential requirements referred to in Article 3 in respect of devices which are in conformity with the relevant national standards adopted pursuant to the harmonized standards the references of which have been published in the Official Journal of the European Communities; Member States shall publish the references of such national standards.

Article 6

1. Where a Member State or the Commission considers that the harmonized standards referred to in Article 5 do not entirely meet the essential requirements referred to in Article 3, the Commission or the Member State concerned shall bring the matter before the Standing Committee set up under Directive 83/189/EEC, giving the reasons therefore. The Committee shall deliver an opinion without delay.

In the light of the opinion of the Committee, the Commission shall inform Member States of the measures to be taken with regard to the standards and the publication referred to in Article 5.

2. A Standing Committee, hereinafter referred to as the "Committee", shall be set up, composed of the representatives of the

Member States and chaired by the representative of the Commission.

The Committee shall draw up its rules of procedure.

Any matter relating to the implementation and practical application of this Directive may be brought before the Committee, in accordance with the procedure set out below.
The representative of the Commission shall submit to the Committee a draft of the measures to be taken. The Committee shall deliver its opinion according to the urgency of the matter, if necessary by taking a vote.

The opinion shall be recorded in the minutes; in addition, each Member State shall have the right to ask to have its position recorded in the minutes.

The Commission shall take the utmost account of the opinion delivered by the Committee. It shall inform the Committee of the manner in which its opinion has been taken into account.

Article 7

1. Where a Member State finds that the devices referred to in Article 1 (2) (c) and (d), correctly put into service and used in accordance with their intended purpose, may compromise the health and/or safety of patients, users or, where applicable, other persons, it shall take all appropriate measures to withdraw such devices from the market or prohibit or restrict their being placed on the market or their being put into service.

The Member State shall immediately inform the Commission of any such measure, indicating the reasons for its decision and, in particular, whether non-compliance with this Directive is due to:

(a) failure to meet the essential requirements referred to in Article 3, where the device does not meet in full or in part the standards referred to in Article 5;

(b) incorrect application of those standards;

(c) shortcomings in the standards themselves.

2. The Commission shall enter into consultation with the parties concerned as soon as possible. Where, after such consultation, the Commission finds that:

- the measures are justified, it shall immediately so inform the Member State which took the initiative and the other Member States; where the decision referred to in paragraph 1 is attributed to shortcomings in the standards, the Commission shall, after consulting the parties concerned, bring the matter before the Committee referred to in Article 6 (1) within two months if the Member State which has taken the decision intends to maintain it and shall initiate the procedures referred to in Article 6 (1),
- the measures are unjustified, it shall immediately so inform the Member State which took the initiative and the manufacturer or his authorized representative established within the Community.

3. Where a device which does not comply bears the CE marking, the competent Member State shall take appropriate action against whomsoever has affixed the mark and shall inform the Commission and the other Member States thereof.

4. The Commission shall ensure that the Member States are kept informed of the progress and outcome of this procedure.

Article 8

1. Member States shall take the necessary steps to ensure that information brought to their knowledge regarding the incidents mentioned below involving a device is recorded and evaluated in a centralized manner:

(a) any deterioration in the characteristics and performances of a device, as well as any inaccuracies in the instruction leaflet which might lead to or might have led to the death of a patient or to a deterioration in his state of health;

(b) any technical or medical reason resulting in withdrawal of a device from the market by the manufacturer.

2. Member States shall, without prejudice to Article 7, forthwith inform the Commission and the other Member States of the incidents referred to in paragraph 1 and of the relevant measures taken or contemplated.

Article 9

1. In the case of devices other than those which are custom-made or intended for clinical investigations, the manufacturer must, in order to affix the CE marking, at his own choice:

(a) follow the procedure relating to the EC declaration of conformity set out in Annex 2; or

(b) follow the procedure relating to EC type-examination set out in Annex 3, coupled with:

(i) the procedure relating to EC verification set out in Annex 4, or

(ii) the procedure relating to the EC declaration of conformity to type set out in Annex 5.

2. In the case of custom-made devices, the manufacturer must draw up the declaration provided for in Annex 6 before placing each device on the market.

3. Where appropriate, the procedures provided for in Annexes 3, 4 and 6 may be discharged by the manufacturer's authorized representative established in the Community.

4. The records and correspondence relating to the procedures referred to in paragraphs 1, 2 and 3 shall be in an official language of the Member State in which the said procedures will be carried out and/or in a language acceptable to the notified body defined in Article 11.

5 During the conformity assessment procedure for a device, the manufacturer and/or the notified body shall take account of the results of any assessment and verification operations which, where appropriate, have been carried out in accordance with this Directive at an intermediate stage of manufacture.

6. Where the conformity assessment procedure involves the intervention of a notified body, the manufacturer, or his authorized representative established in the Community, may apply to a body of his choice within the framework of the tasks for which the body has been notified.

7. The notified body may require, where duly justified, any information or data which is necessary for establishing and maintaining the attestation of conformity in view of the chosen procedure.

8. Decisions taken by the notified bodies in accordance with Annexes II and III shall be valid for a maximum of five years and may be extended on application, made at a time agreed in the contract signed by both parties, for further periods of five years.

9. By derogation from paragraphs 1 and 2 the competent authorities may authorize, on duly justified request, the placing on the market and putting into service, within the territory of the Member State concerned, of individual devices for which the procedures referred to in paragraphs 1 and 2 have not been carried out and the use of which is in the interest of protection of health.

Article 9a

1. Where a Member State considers that the conformity of a device or family of devices should be established, by way of derogation from the provisions of Article 9, by applying solely one of the given procedures chosen from among those referred to in Article 9, it shall submit a duly substantiated request to the Commission and ask it to take the necessary measures. These measures shall be adopted in accordance with the procedure referred to in Article 7 (2) of Directive 93/42/EEC(9).

2. The Commission shall inform the Member States of the measures taken and, where appropriate, publish the relevant parts of these measures in the Official Journal of the European Communities.

Article 10

1. In the case of devices intended for clinical investigations, the manufacturer or his authorized representative established in the Community shall, at least 60 days before the commencement of the investigations, submit the statement referred to in Annex 6 to the competent authorities of the Member State in which the investigations are to be conducted.

2. The manufacturer may commence the relevant clinical investigations at the end of a period of 60 days after notification, unless the competent authorities have notified him within that period of a decision to the contrary, based on considerations of public health or public order.

Member States may however authorize manufacturers to start the clinical investigations in question before the expiry of the 60-day period, provided that the Ethical Committee concerned has delivered a favourable opinion with respect to the investigation programme in question.

2a. The authorization referred to in the second subparagraph of paragraph 2 may be subject to approval by the competent authority.

3. The Member States shall, if necessary, take the appropriate steps to ensure public health and order.

Article 11

1. Member States shall notify the Commission and the other Member States of the bodies which they have appointed to carry out the procedures referred to in Article 9 together with the specific tasks which

these bodies have been appointed to carry out and the identification numbers assigned to them beforehand by the Commission.

The Commission shall publish in the Official Journal of the European Communities a list of the notified bodies and the identification numbers and the tasks for which they have been notified. The Commission shall ensure that the list is kept up to date.

2. Member States shall apply the minimum criteria, set out in Annex 8, for the designation of bodies. Bodies that satisfy the criteria fixed by the relevant harmonized standards shall be presumed to satisfy the relevant minimum criteria.

3. A Member State that has notified a body shall withdraw that notification if it finds that the body no longer meets the criteria referred to in paragraph 2. It shall immediately inform the other Member States and the Commission thereof.

4. The notified body and the manufacturer or his agent established in the Community shall fix, by common accord, the time limits for completion of the evaluation and verification operations referred to in Annexes 2 to 5.

Article 12

1. Devices other than those which are custom made or intended for clinical investigations considered to meet the essential requirements referred to in Article 3 must bear the CE marking of conformity.

2. The CE marking of conformity, as shown in Annex 9, must appear in a visible, legible and indelible form on the sterile pack and, where appropriate, on the sales packaging, if any, and on the instruction leaflet.

It must be followed by the identification number of the notified body responsible for implementation of the procedures set out in Annexes 2, 4 and 5.

3. The affixing of markings on the devices which are likely to deceive third parties as to the meaning and form of the CE marking shall be prohibited. Any other marking may be affixed to the packaging or to the instruction leaflet accompanying the device provided that the visibility and legibility of the CE marking is not hereby reduced.

Article 13

Without prejudice to Article 7:

(a) where a Member State establishes that the CE marking has been affixed unduly, the manufacturer or his authorized representative established within the Community shall be obliged to end the infringement under the conditions imposed by the Member State;

(b) where non-compliance continues, the Member State must take all appropriate measures to restrict or prohibit the placing on the market of the device in question or to ensure that it is withdrawn from the market in accordance with the procedures laid down in Article 7.

Article 14

Any decision taken pursuant to this Directive and resulting in the refusal of or restrictions on the placing on the market and/or putting into service of a device shall state the exact grounds on which it is based. Such decision shall be notified without delay to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member State in question and of the time limits to which such remedies are subject.

In the event of a decision as referred to in the previous paragraph, the manufacturer or his authorized representative established in the Community, shall have an opportunity to put forward his viewpoint in advance, unless such consultation is not possible because of the urgency of the measures to be taken.

Article 15

Member States shall ensure that all the parties involved in the application of this Directive are bound to observe confidentiality with regard to all information obtained in
carrying out their tasks. This does not affect the obligations of Member States and notified bodies with regard to mutual information and the dissemination of warnings.

Article 16

1. Before 1 July 1992, Member States shall adopt and publish the laws, regulations and administrative provisions necessary in order to comply with this Directive. They shall forthwith inform the Commission thereof. They shall apply such provisions from 1 January 1993.(10)(11)

2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.

3. Member States shall, for the period up to 31 December 1994, permit the placing on the market and putting into service of devices complying with national rules in force in their territory on 31 December 1992.

Article 17

This Directive is addressed to the Member States.

Done at Luxembourg, 20 June 1990

For the Council

The President

D.J. O' MALLEY

Footnotes
(1)OJ No. C 14, 18.1.1989, p. 4
(2)OJ No. C 120, 16.5.1989, p. 75 and OJ No. C 149, 18.6.1990
(3)OJ No. C 159, 28.6.1989, p. 47
(4)OJ No. L 109, 26.4.1983, p. 8
(5)OJ No. L 81, 26.3.1988, p. 75
(6)OJ No. 22, 9.2.1965, p. 369/65
(7)OJ No. L 15, 17.1.1987, p. 36
(8)OJ No. L 139, 23.5.1989, p. 19
(9)OJ No. L 169, 12.7.1993, p. 1
(10)e transitional arrangements relating to the application of Directive 93/42/EEC ® see article 22 of that directive
(11)he transitional arrangements relating to the application of Directive 93/68/EEC ® see article 14 of that directive

ANNEX I

ESSENTIAL REQUIREMENTS

I. GENERAL REQUIREMENTS

1. The devices must be designed and manufactured in such a way that, when implanted under the conditions and for the purposes laid down, their use does not compromise the clinical condition or the safety of patients. They must not present any risk to the persons implanting them or, where applicable, to other persons.

2. The devices must achieve the performances intended by the manufacturer, viz. be designed and manufactured in such a way that they are suitable for one or more of the functions referred to in Article 1 (2) (a) as specified by him.

3. The characteristics and performances referred to in sections 1 and 2 must not be adversely affected to such a degree that the clinical condition and safety of the patients or, as appropriate, of other persons are compromised during the lifetime of the device anticipated by the manufacturer, where the device is subjected to stresses which may occur during normal conditions of use.

4. The devices must be designed, manufactured and packed in such a way that their characteristics and performances are not adversely affected in the storage and transport conditions laid down by the manufacturer (temperature, humidity, etc.).

5. Any side effects or undesirable conditions must constitute acceptable risks when weighed against the performances intended.

II. REQUIREMENTS REGARDING DESIGN AND CONSTRUCTION

6. The solutions adopted by the manufacturer for the design and construction of the devices must comply with safety principles taking account of the generally acknowledged state of the art.

7. Implantable devices must be designed, manufactured and packed in a non-reusable pack according to appropriate procedures to ensure they are sterile when placed on the market and, in the storage and transport conditions stipulated by the manufacturer, remain so until the packaging is removed and they are implanted.

8. Devices must be designed and manufactured in such a way as to remove or minimize as far as possible:

- the risk of physical injury in connection with their physical, including dimensional, features,
- risks connected with the use of energy sources with particular reference, where electricity is used, to insulation, leakage currents and overheating of the devices,
- risks connected with reasonably foreseeable environmental conditions such as magnetic fields, external electrical influences, electrostatic discharge, pressure or variations in pressure and acceleration,
- risks connected with medical treatment, in particular those resulting from the use of defibrillators or high-frequency surgical equipment,
- risks connected with ionizing radiation from radioactive substances included in the device, in compliance with the protection requirements laid down in Directive 80/836/Euratom(12), as amended by Directives 84/467/Euratom(13) and 84/466/Euratom(14),
- risks which may arise where maintenance and calibration are impossible, including:
- excessive increase of leakage currents,
- ageing of the materials used,
- excess heat generated by the device,
- decreased accuracy of any measuring or control mechanism.

9. The devices must be designed and manufactured in such a way as to guarantee the characteristics and performances referred to in I. "General requirements", with particular attention being paid to:

- the choice of materials used, particularly as regards toxicity aspects,
- mutual compatibility between the materials used and biological tissues, cells and body fluids, account being taken of the anticipated use of the device,
- compatibility of the devices with the substances they are intended to administer,
- the quality of the connections, particularly in respect of safety,
- the reliability of the source of energy,
- if appropriate, that they are leakproof,
- proper functioning of the programming and control systems, including software.

10. Where a device incorporates, as an integral part, a substance which, when used separately, is likely to be considered to be a medicinal product as defined in Article 1 of Directive 65/65/EEC, and whose action in combination with the device may result in its bioavailability, the safety,

quality and usefulness of the substance, account being taken of the purpose of the device, must be verified by analogy with the appropriate methods specified in Directive 75/318/EEC(15), as last amended by Directive 89/341/EEC(16).

11. The devices and, if appropriate, their component parts must be identified to allow any necessary measure to be taken following the discovery of a potential risk in connection with the devices and their component parts.

12. Devices must bear a code by which they and their manufacturer can be unequivocably identified (particularly with regard to the type of device and year of manufacture); it must be possible to read this code, if necessary, without the need for a surgical operation.

13. When a device or its accessories bear instructions required for the operation of the device or indicate operating or adjustment parameters, by means of a visual system, such information must be understandable to the user and, as appropriate, the patient.

14. Every device must bear, legibly and indelibly, the following particulars, where appropriate in the form of generally recognized symbols:

14.1. On the sterile pack:
- the method of sterilization,
- an indication permitting this packaging to be recognized as such,
- the name and address of the manufacturer,
- a description of the device,
- if the device is intended for clinical investigations, the words: "exclusively for clinical investigations",
- if the device is custom-made, the words "custom-made device"
- a declaration that the implantable device is in a sterile condition,
- the month and year of manufacture,
- an indication of the time limit for implanting a device safely.

14.2.On the sales packaging:
- the name and address of the manufacturer,
- a description of the device,
- the purpose of the device,
- the relevant characteristics for its use,
- if the device is intended for clinical investigations, the words: "exclusively for clinical investigations",
- if the device is custom-made, the words: "custom-made device",
- a declaration that the implantable device is in a sterile condition,
- the month and year of manufacture,
- an indication of the time limit for implanting a device safely,
- the conditions for transporting and storing the device.

15. When placed on the market, each device must be accompanied by instructions for use giving the following particulars:

- the year of authorization to affix the *CE marking*,
- the details referred to in 14.1 and 14.2, with the exception of those referred to in the eighth and ninth indents,
- the performances referred to in section 2 and any undesirable side effects,
- information allowing the physician to select a suitable device and the corresponding software and accessories,
- information constituting the instructions for use allowing the physician and, where appropriate, the patient to use the device, its accessories and software correctly, as well as information on the nature, scope and times for operating controls and trials and, where appropriate, maintenance measures,
- information allowing, if appropriate, certain risks in connection with implantation of the device to be avoided,
- information regarding the risks of reciprocal interference (17) in connection with the presence of the device during specific investigations or treatment,
- the necessary instructions in the event of the sterile pack being damaged and, where appropriate, details of appropriate methods of resterilization,
- an indication, if appropriate, that a device can be reused only if it is reconditioned under the responsibility of the manufacturer to comply with the essential requirements.

The instruction leaflet must also include details allowing the physician to brief the patient on the contra-indications and the precautions to be taken. These details should cover in particular:

- information allowing the lifetime of the energy source to be established,
- precautions to be taken should changes occur in the device's performance,
- precautions to be taken as regards exposure, in reasonably foreseeable environmental conditions, to magnetic fields, external electrical influences, electrostatic discharge, pressure or variations in pressure, acceleration, etc.,
- adequate information regarding the medicinal products which the device in question is designed to administer.

16. Confirmation that the device satisfies the requirements in respect of characteristics and performances, as referred to in I. "General requirements", in normal conditions of use, and the evaluation of the side effects or undesirable effects must be based on clinical data established in accordance with Annex 7.

Footnotes

(12)OJ No L 246, 17. 9. 1980, p. 1.
(13)OJ No. L 265, 5.10.1984, p. 4
(14)OJ No. L 265, 5.10.1984, p. 1
(15)OJ No. L 147, 9.6.1975, p. 1
(16)OJ No. L 142, 25.5.1989, p. 11
(17)"Risks of reciprocal interference" means adverse effects on the device caused by instruments present at the time of investigations or treatment, and vice versa

ANNEX II

EC DECLARATION OF CONFORMITY

(Complete quality assurance system)

1. The manufacturer shall apply the quality system approved for the design, manufacture and final inspection of the products concerned as specified in sections 3 and 4 and shall be subject to EC surveillance as specified in section 5.

2. The declaration of conformity is the procedure by means of which the manufacturer who satisfies the obligations of section 1 ensures and declares that the products concerned meet the provisions of this Directive which apply to them.

The manufacturer or his authorized representative established within the Community shall affix the CE marking in accordance with Article 12 and shall draw up a written declaration of conformity.

This declaration shall cover one or more identified examples of the product and shall be kept by the manufacturer or his authorized representative established within the Community.

The *CE marking* shall be accompanied by the identification number of the notified body responsible.

3. Quality system

3.1. The manufacturer shall make an application for evaluation of his quality system to a notified body.

The application shall include:

- all the appropriate items of information for the category of products manufacture of which is envisaged,
- the quality-system documentation,
- an undertaking to fulfil the obligations arising from the quality system as approved,
- an undertaking to maintain the approved quality system in such a way that it remains adequate and efficacious,
- an undertaking by the manufacturer to institute and keep up-dated a post-marketing surveillance system. The undertaking shall include an obligation for the manufacturer to notify the competent authorities of the following incidents immediately on learning of them:

(i) any deterioration in the characteristics or performances, and any inaccuracies in the instruction leaflet for a device which might lead to or have led to the death of a patient or a deterioration in his state of health;

(ii) any technical or medical reason resulting in withdrawal of a device from the market by the manufacturer.

3.2. The application of the quality system must ensure that the products conform to the provisions of this Directive which apply to them at every stage, from design to final controls.

All the elements, requirements and provisions adopted by the manufacturer for his quality system shall be documented in a systematic and orderly manner in the form of written policies and procedures. This quality-system documentation must make possible a uniform interpretation of the quality policies and procedures such as quality programmes, quality plans, quality manuals and quality records.
It shall include in particular an adequate description of:

(a) the manufacturer's quality objectives;

(b) the organization of the business and in particular:

- the organizational structures, the responsibilities of the managerial staff and their organizational authority where quality of design and manufacture of the products is concerned,
- the methods of monitoring the efficient operation of the quality system and in particular its ability to achieve the desired quality of the design and of the products, including control of products which do not conform;

(c) the procedures for monitoring and verifying the design of the products and in particular:

- the design specifications, including the standards which will be applied and a description of the solutions adopted to fulfil the essential requirements which apply to the products when the standards referred to in Article 5 are not applied in full,
- the techniques of control and verification of the design, the processes and systematic actions which will be used when the products are being designed;

(d) the techniques of control and of quality assurance at the manufacturing stage and in particular:

- the processes and procedures which will be used, particularly as regards sterilization, purchasing and the relevant documents,
- product-identification procedures drawn up and kept up to date from drawings, specifications or other relevant documents at every stage of manufacture;

(e) the appropriate tests and trials which will be effected before, during and after production, the frequency with which they will take place, and the test equipment used.

3.3 Without prejudice to Article 13 of this Directive, the notified body shall effect an audit of the quality system to determine whether it meets the requirements referred to in 3.2. It shall presume

conformity with these requirements for the quality systems which use the corresponding harmonized standards.

The team entrusted with the evaluation shall include at least one member who has already had experience of evaluations of the technology concerned. The evaluation procedure shall include an inspection on the manufacturer's premises.

The decision shall be notified to the manufacturer after the final inspection. It shall contain the conclusions of the control and a reasoned evaluation.

3.4. The manufacturer shall inform the notified body which has approved the quality system of any plan to alter the quality system.

The notified body shall evaluate the proposed modifications and shall verify whether the quality system so modified would meet the requirements referred to in 3.2; it shall notify the manufacturer of its decision. This decision shall contain the conclusions of the control and a reasoned evaluation.

4. Examination of the design of the product

4.1. In addition to the obligations incumbent on him under section 3, the manufacturer shall make an application for examination of the design dossier relating to the product which he plans to manufacture and which falls into the category referred to in 3.1.

4.2. The application shall describe the design, manufacture, and performances of the product in question and shall include the necessary particulars which make it possible to evaluate whether it complies with the requirements of this Directive.

It shall include inter alia:

- the design specifications, including the standards which have been applied,
- the necessary proof of their appropriations, in particular where the standards referred to in Article 5 have not been applied in full. This proof must include the results of the appropriate tests carried out by the manufacturer or carried out under his responsibility,
- a statement as to whether or not the device incorporates, as an integral part, a substance as referred to in section 10 of Annex 1, whose action in combination with the device may result in its bioavailability, together with data on the relevant trials conducted,
- the clinical data referred to in Annex 7,
- the draft instruction leaflet.

4.3. The notified body shall examine the application and, where the product complies with the relevant provisions of this Directive, shall issue the applicant with an EC design examination certificate. The notified body may require the application to be supplemented by further tests or proof so that compliance with the requirements of the Directive may be evaluated. The certificate shall contain the conclusions of the examination, the conditions of its validity, the data needed

for identification of the approved design and, where appropriate, a description of the intended use of the product.

4.4. The applicant shall inform the notified body which issued the EC design examination certificate of any modification made to the approved design. Modifications made to the approved design must obtain supplementary approval from the notified body which issued the EC design examination certificate where such modifications may affect conformity with the essential requirements of this Directive or the conditions prescribed for the use of the product. This supplementary approval shall be given in the form of an addendum to the EC design examination certificate.

5. Surveillance

5.1. The aim of surveillance is to ensure that the manufacturer duly fulfils the obligations arising from the approved quality system.

5.2. The manufacturer shall authorize the notified body to carry out all necessary inspections and shall supply it with all appropriate information, in particular:

- the quality-system documentation,
- the data stipulated in the part of the quality system relating to design, such as the results of analyses, calculations, tests, etc.,
- the data stipulated in the part of the quality system relating to manufacture, such as reports concerning inspections, tests, standardizations/calibrations and the qualifications of the staff concerned, etc.

5.3. The notified body shall periodically carry out appropriate inspections and evaluations in order to ascertain that the manufacturer is applying the approved quality system, and shall supply the manufacturer with an evaluation report.

5.4. In addition, the notified body may make unannounced visits to the manufacturer, and shall supply him with an inspection report.

6. Administrative provisions

6.1. For at least five years from last date of manufacture of the product, the manufacturer shall keep available for the national authorities:

- the declaration of conformity,

- the documentation referred to in the second indent of section 3.1,

- the amendments referred to in section 3.4,

- the documentation referred to in section 4.2,

- the decisions and reports of the notified body referred to in sections 3.4, 4.3, 5.3 and 5.4.

6.2 On request, the notified body shall make available to the other notified bodies and the competent authority all relevant information on approvals of quality systems issued, refused or withdrawn.

6.3 Where neither the manufacturer nor his authorized representative are established in the Community, the task of keeping available for the authorities the technical documentation referred to in Article 4 (2) shall fall to the person responsible for placing the appliance on the Community market.

ANNEX III

EC TYPE-EXAMINATION

1. EC type-examination is the procedure whereby a notified body observes and certifies that a representative sample of the production envisaged satisfies the relevant provisions of this Directive.

2. The application for EC type-examination shall be made by the manufacturer, or by his authorized representative established in the Community, to a notified body.

The application shall include:

- the name and address of the manufacturer and the name and address of the authorized representative if the application is made by the latter,
- a written declaration specifying that an application has not been made to any other notified body,
- the documentation described in section 3 needed to allow an evaluation to be made of the conformity of a representative sample of the production in question, hereinafter referred to as "type", with the requirements of this Directive.

The applicant shall make a "type" available to the notified body. The notified body may request other samples as necessary.

3. The documentation must make it possible to understand the design, the manufacture and the performances of the product. The documentation shall contain the following items in particular:

- a general description of the type,
- design drawings, methods of manufacture envisaged, in particular as regards sterilization, and diagrams of parts, sub-assemblies, circuits, etc.,
- the descriptions and explanations necessary for the understanding of the abovementioned drawings and diagrams and of the operation of the product,
- a list of the standards referred to in Article 5, applied in full or in part, and a description of the solutions adopted to satisfy the essential requirements where the standards referred to in Article 5 have not been applied,
- the results of design calculations, investigations and technical tests carried out, etc.,
- a statement as to whether or not the device incorporates, as an integral part, a substance as referred to in section 10 of Annex 1, whose action in combination with the device may result in its bioavailability, together with data on the relevant trials conducted,
- the clinical data referred to in Annex 7,
- the draft instruction leaflet.

4. The notified body shall:

4.1 examine and evaluate the documentation, verify that the type has been manufactured in accordance with that documentation; it shall also record the items which have been designed in accordance with the applicable provisions of the standards referred to in Article 5, as well as the items for which the design is not based on the relevant provisions of the said standards;

4.2 carry out or have carried out the appropriate inspections and the tests necessary to verify whether the solutions adopted by the manufacturer satisfy the essential requirements of this Directive where the standards referred to in Article 5 have not been applied;

4.3 carry out or have carried out the appropriate inspections and the tests necessary to verify whether, where the manufacturer has chosen to apply the relevant standards, these have actually been applied;

4.4 agree with the applicant on the place where the necessary inspections and tests will be carried out.

5. Where the type meets the provisions of this Directive, the notified body shall issue an EC type-examination certificate to the applicant. The certificate shall contain the name and address of the manufacturer, the conclusions of the control, the conditions under which the certificate is valid and the information necessary for identification of the type approved.

The significant parts of the documentation shall be attached to the certificate and a copy shall be kept by the notified body.

6. The applicant shall inform the notified body which issued the EC type-examination certificate of any modification made to the approved product.

Modifications to the approved product must receive further approval from the notified body which issued the EC type-examination certificate where such modifications may affect conformity with the essential requirements or with the conditions of use specified for the product. This new approval shall be issued, where appropriate, in the form of a supplement to the initial EC type-examination certificate.

7. Administrative provisions

7.1 On request, each notified body shall make available to the other notified bodies and the competent authority, all relevant information on EC type-examination certificates and addenda issued, refused or withdrawn.

7.2 Other notified bodies may obtain a copy of the EC type-examination certificates and/or the addenda to them. The annexes to the certificates shall be made available to the other notified bodies when a reasoned application is made and after the manufacturer has been informed.

7.3 The manufacturer or his authorized representative shall keep with the technical documentation a copy of the EC type-examination certificates and the supplements to them for a period of at least five years from the manufacture of the last appliance.

7.4 Where neither the manufacturer nor his authorized representative are established in the Community, the task of keeping the technical documentation available for the authorities shall fall to the person responsible for placing the appliance concerned on the Community market.

ANNEX IV

EC VERIFICATION

1. EC verification is the procedure whereby the manufacturer or his authorized representative established within the Community ensures and declares that the products subject to the provisions of section 3 are in conformity with the type as described in the EC type-examination certification and satisfy the requirements of this Directive that apply to them.

2. The manufacturer or his authorized representative established within the Community shall take all measures necessary in order that the manufacturing process ensures conformity of the products to the type as described in the EC type-examination certification and to the requirements of this Directive that apply to them. The manufacturer or his authorized representative established within the Community shall affix the CE marking to each product and draw up a written declaration of conformity.

3. The manufacturer shall, before the start of manufacture, prepare documents defining the manufacturing processes, in particular as regards sterilization, together with all the routine, pre-established provisions to be implemented to ensure uniformity of production and conformity of the products with the type as described in the EC type-examination certificate as well as with the relevant requirements of this Directive.

4. The manufacturer shall undertake to institute and keep updated a post-marketing surveillance system. This undertaking shall include the obligation on the part of the manufacturer to notify the competent authorities of the following events immediately on learning of them:

(i) any change in the characteristics or performances and any inaccuracies in the instruction leaflet for a device which might lead to or have led to the death of a patient or deterioration in his state of health;

(ii) any technical or medical reason resulting in the withdrawal of a device from the market by a manufacturer.

5. The notified body shall carry out the appropriate examinations and tests in order to check the conformity of the product to the requirements of this Directive by examination and testing of products on a statistical basis, as specified in section 6. The manufacturer must authorize the notified body to evaluate the efficiency of the measures taken pursuant to section 3, by audit where appropriate.

6. Statistical verification

6.1. Manufacturers shall present the products manufactured in the form of uniform batches and shall take all necessary measures in order that the manufacturing process ensures the uniformity of each batch produced.

6.2. A random sample shall be taken from each batch. Products in a sample shall be individually examined and appropriate tests, as set out in the standard(s) referred to in Article 5, or equivalent tests shall be carried out to verify their conformity to the type as described in the EC type-examination certificate and thereby determine whether a batch is to be accepted or rejected.

6.3. Statistical control of products shall be based on attributes, entailing a sampling system with the following characteristics:
- a level of quality corresponding to a probability of acceptance of 95 %, with a non-conformity percentage of between 0,29 and 1 %,
- a limit quality corresponding to a probability of acceptance of 5 %, with a percentage of non-conformity of between 3 and 7 %.

6.4. Where batches are accepted, the notified body shall affix, or cause to be affixed, its identification number to each product and draw up a written certificate of conformity relating to the tests carried out. All products in the batch may be placed on the market except for those products from the sample which were found not to be in conformity.

Where a batch is rejected, the notified body shall take appropriate measures to prevent the placing on the market of that batch. In the event of frequent rejection of batches the notified body may suspend the statistical verification.

The manufacturer may, under the responsibility of the notified body, affix the latter's identification number during the manufacturing process.

6.5. The manufacturer or his authorized representative shall ensure that he is able to supply the notified body's certificates of conformity on request.

ANNEX V

EC DECLARATION OF CONFORMITY TO TYPE

(Assurance of production quality)

1. The manufacturer shall apply the quality system approved for the manufacture and shall conduct the final inspection of the products concerned as specified in 3; he shall be subject to the surveillance referred to in section 4.

2. This declaration of conformity is the procedural element whereby the manufacturer who satisfies the obligations of section 1 guarantees and declares that the products concerned conform to the type described in the EC type-examination certificate and meet the provisions of the Directive which apply to them.

The manufacturer or his authorized representative established within the Community shall affix the CE marking in accordance with Article 12 and shall draw up a written declaration of conformity. This declaration shall cover one or more identified specimens of the product and shall be kept by the manufacturer. The CE marking shall be accompanied by the identification number of the notified body responsible.

3. Quality system

3.1 The manufacturer shall make an application for evaluation of his quality system to a notified body.

The application shall include:

- all appropriate information concerning the products which it is intended to manufacture,
- the quality-system documentation,
- an undertaking to fulfil the obligations arising from the quality system as approved,
- an undertaking to maintain the approved quality system in such a way that it remains adequate and efficacious,
- where appropriate, the technical documentation relating to the approved type and a copy of the EC type-examination certificate,
- an undertaking by the manufacturer to institute and keep up-dated a post-marketing surveillance system. The undertaking shall include an obligation for the manufacturer to notify the competent authorities of the following incidents immediately on learning of them:

(i) any deterioration in the characteristics or performances, and any inaccuracies in the instruction leaflet for a device which might lead to or have led to the death of a patient or a deterioration in his state of health;

(ii) any technical or medical reason resulting in withdrawal of a device from the market by the manufacturer.

3.2. Application of the quality system must ensure that the products conform to the type described in the EC type-examination certificate.

All the elements, requirements and provisions adopted by the manufacturer for his quality system shall be documented in a systematic and orderly manner in the form of written policies and procedures. This quality-system documentation must make possible a uniform interpretation of the quality policies and procedures such as quality programmes, quality plans, quality manuals and quality records.

It shall include in particular an adequate description of:

(a) the manufacturer's quality objectives;

(b) the organization of the business and in particular:

- the organizational structures, the responsibilities of the managerial staff and their organizational authority where manufacture of the products is concerned,
- the methods of monitoring the efficient operation of the quality system and in particular its ability to achieve the desired quality of the products, including control of products which do not conform;

(c) the techniques of control and of quality assurance at the manufacturing stage and in particular:

- the processes and procedures which will be used, particularly as regards sterilization, purchasing and the relevant documents,
- product identification procedures drawn up and kept up-to-date from drawings, specifications or other relevant documents at every stage of manufacture;

(d) the appropriate tests and trials which will be effected before, during and after production, the frequency with which they will take place, and the test equipment used.

3.3 Without prejudice to Article 13, the notified body shall effect an audit of the quality system to determine whether it meets the requirements referred to in 3.2. It shall presume conformity with these requirements for the quality systems which use the corresponding harmonized standards.

The team entrusted with the evaluation shall include at least one member who has already had experience of evaluations of the technology concerned. The evaluation procedure shall include an inspection on the manufacturer's premises.

The decision shall be notified to the manufacturer after the final inspection. It shall contain the conclusions of the control and a reasoned evaluation.

3.4 The manufacturer shall inform the notified body which has approved the quality system of any plan to alter that system.

The notified body shall evaluate the proposed modifications and shall verify whether the quality system so modified would meet the requirements referred to in 3.2; it shall notify the manufacturer of its decision. This decision shall contain the conclusions of the control and a reasoned evaluation.

4. Surveillance

4.1. The aim of surveillance is to ensure that the manufacturer duly fulfils the obligations which arise from the approved quality system.

4.2 The manufacturer shall authorize the notified body to carry out all necessary inspections and shall supply it with all appropriate information, in particular:

- the quality-system documentation,
- the data stipulated in the part of the quality system relating to manufacture, such as reports concerning inspections, tests, standardizations/calibrations and the qualifications of the staff concerned, etc.

4.3. The notified body shall periodically carry out appropriate inspections and evaluations in order to ascertain that the manufacturer is applying the approved quality system, and shall supply the manufacturer with an evaluation report.

4.4. In addition, the notified body may make unannounced visits to the manufacturer, and shall supply him with an inspection report.

5. The notified body shall communicate to the other notified bodies all relevant information concerning approvals of quality systems issued, refused or withdrawn.

ANNEX VI

STATEMENT CONCERNING DEVICES INTENDED FOR SPECIAL PURPOSES

1. The manufacturer or his authorized representative established within the Community shall draw up for custom-made devices or for devices intended for clinical investigations the statement comprising the elements stipulated in section 2.

2. The statement shall comprise the following information:

2.1. For custom-made devices:

- data allowing the device in question to be identified,
- a statement affirming that the device is intended for exclusive use by a particular patient, together with his name,
- the name of the doctor who drew up the prescription and, if applicable, the name of the clinic concerned,
- the particular features of the device as described by the medical prescription concerned,
- a statement affirming that the device complies with the essential requirements given in Annex 1 and, where applicable, indicating which essential requirements have not been wholly met, together with the grounds.

2.2. For devices intended for clinical investigations covered in Annex 7:

- data allowing the devices in question to be identified,
- an investigation plan giving in particular the purpose, scope and number of the devices concerned,
- the name of the doctor and of the institution responsible for the investigations,
- the place, date of commencement and duration scheduled for the investigations,
- a statement affirming that the device in question complies with the essential requirements apart from the aspects constituting the object of the investigations and that, with regard to these aspects, every precaution has been taken to protect the health and safety of the patient.

3. The manufacturer shall undertake to keep available for the competent national authorities:

3.1. For custom-made devices, documentation enabling the design, manufacture and performances of the product, including the expected performances, to be understood, so as to allow conformity with the requirement of this Directive to be assessed.

The manufacturer shall take all necessary measures to see that the manufacturing process ensures that the products manufactured conform to the documentation referred to in the first paragraph.

3.2. For devices intended for clinical investigations, the documentation shall also contain:

- a general description of the product,

- design drawings, manufacturing methods, in particular as regards sterilization, and diagrams of parts, sub-assemblies, circuits, etc.,
- the descriptions and explanations necessary for the understanding of the said drawings and diagrams and of the operation of the product,
- a list of the standards laid down in Article 5, applied in full or in part, and a description of the solutions adopted to satisfy the essential requirements of the Directive where the standards in Article 5 have not been applied,
- the results of the design calculations, checks and technical tests carried out, etc.
- The manufacturer shall take all necessary measures to see that the manufacturing process ensures that the products manufactured conform to the documentation referred to in 3.1 and in in the first paragraph of this section.
- The manufacturer may authorize the evaluation, by audit where necessary, of the effectiveness of these measures.

ANNEX VII

CLINICAL EVALUATION

1. General provisions

1.1. Adequacy of the clinical data presented, as referred to in section 4.2 of Annex 2, and in section 3 of Annex 3, shall be based, account being taken as appropriate of the relevant harmonized standards, on either:

1.1.1 a collation of currently available relevant scientific literature covering the intended use of the device and the techniques therefore, as well as, if appropriate, a written report making a critical assessment of this collation; or

1.1.2. the results of all clinical investigations made, including those carried out in accordance with section 2.

1.2 All data must remain confidential unless it is deemed essential that they be divulged.

2. Clinical investigation

2.1. Purpose

The purpose of clinical investigation is to:

- verify that, under normal conditions of use, the performances of the device comply with those indicated in section 2 of Annex 1,
- determine any undesirable side effects, under normal conditions of use, and assess whether they are acceptable risks having regard to the intended performance of the device.

2.2. Ethical consideration

Clinical investigations shall be made in accordance with the Declaration of Helsinki approved by the 18th World Medical Assembly in Helsinki, Finland, in 1964, and amended by the 29th World Medical Assembly in Tokyo, Japan, in 1975 and the 35th World Medical Assembly in Venice, Italy, in 1983. It is mandatory that all measures relating to the protection of human subjects are carried out in the spirit of the Declaration of Helsinki. This includes every step in the clinical investigation from first consideration of need and justification of the study to publication of results.

2.3. Methods

2.3.1 Clinical investigations shall be performed according to an appropriate state of the art plan of investigation defined in such a way as to confirm or refute the manufacturer's claims for the

device; the investigations shall include an adequate number of observations to guarantee the scientific validity of the conclusions.

2.3.2. The procedures utilized to perform the investigations shall be appropriate to the device under examination.

2.3.3. Clinical investigations shall be performed in circumstances equivalent to those which would be found in normal conditions of use of the device.

2.3.4. All appropriate features, including those involving the safety and performances of the device, and its effects on the patients, shall be examined.

2.3.5. All adverse events shall be fully recorded.

2.3.6. The investigations shall be performed under the responsibility of an appropriately qualified medical specialist, in an appropriate environment.
The medical specialist shall have access to the technical data regarding the device.

2.3.7. The written report, signed by the responsible medical specialist, shall comprise a critical evaluation of all the data collected during the clinical investigation.

ANNEX VIII

MINIMUM CRITERIA TO BE MET WHEN DESIGNATING INSPECTION BODIES TO BE NOTIFIED

1. The body, its director and the staff responsible for carrying out the evaluation and verification operations shall not be the designer, manufacturer, supplier or installer of devices which they control, nor the authorized representative of any of those parties. They may not become directly involved in the design, construction, marketing or maintenance of the devices, nor represent the parties engaged in these activities. This does not preclude the possibility of exchanges of technical information between the manufacturer and the body.

2. The body and its staff must carry out the evaluation and verification operations with the highest degree of professional integrity and technical competence and must be free from all pressures and inducements, particularly financial, which might influence their judgement or the results of the inspection, especially from persons or groups of persons with an interest in the results of verifications.

3. The body must be able to carry out all the tasks in one of Annexes 2 to 5 assigned to such a body and for which it has been notified, whether those tasks are carried out by the body itself or under its responsibility. In particular, it must have at its disposal the necessary staff and possess the necessary facilities to enable it to perform properly the technical and administrative tasks connected with evaluation and verification; it must also have access to the equipment necessary for the verifications required.

4. The staff responsible for control operations must have:

- sound vocational training covering all the evaluation and verification operations for which the body has been designated,
- satisfactory knowledge of the requirements of the controls they carry out and adequate experience of such operations,
- the ability required to draw up the certificates, records and reports to demonstrate that the controls have been carried out.

5. The impartiality of inspection staff must be guaranteed. Their remuneration must not depend on the number of controls carried out, nor on the results of such controls.

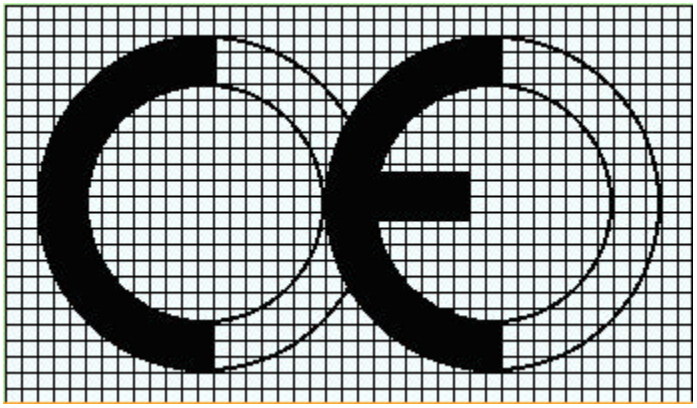
6. The body must take out liability insurance unless liability is assumed by the State in accordance with national law, or the Member State itself is directly responsible for controls.

7. The staff of the body are bound to observe professional secrecy with regard to all information gained in carrying out their tasks (except vis-à-vis the competent administrative authorities of the State in which their activities are carried out) under this Directive or any provision of national law giving effect to it.

ANNEX IX

CE CONFORMITY MARKING

- The CE conformity marking shall consist of the initials" CE" taking the following form:



- If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

- The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.
This minimum dimension may be waived for small-scale devices.

Active Implantable Medical Devices Harmonized Standards

Note: This list of Active Implantable Medical Devices Harmonized Standards is from the Web Site: http://www.newapproach.org

European Standards Bodies	Standard reference	Titles	Ratification date	Publication OJ
CEN	EN 540	Clinical investigation of medical devices for humans	1993	C 181 of 1999-06-26
CEN	EN 550	Sterilization of medical devices - Validation and routine control of ethylene oxide sterilisation	1994	C 181 of 1999-06-26
CEN	EN 552	Sterilization of medical devices - Validation and routine control of sterilisation by irradiation	1994	C 181 of 1999-06-26
CEN	EN 554	Sterilization of medical devices - Validation and routine control of sterilisation by moist heat	1994	C 181 of 1999-06-26
CEN	EN 556	Sterilization of medical devices - requirements for medical devices to be labelled "Sterile"	1994	C 181 of 1999-06-26
CEN	EN 868-1	Packaging materials and systems for medical devices which are to be sterilized - Part 1 : general requirements and test methods	1997	C 181 of 1999-06-26
CEN	EN 980 A1	Graphical symbols for use in the labelling of medical devices	1996 1999	C 293 of 2000-10-14
CEN	EN 1041	Information supplied by the manufacturer with medical devices	1998	C 181 of 1999-06-26
CEN	EN 1174-1	Sterilization of medical devices - Estimation of the population of micro-organisms on product – Part 1 : requirements	1996	C 181 of 1999-06-26
CEN	EN 1174-2	Sterilization of medical devices - Estimation of the population of micro-organisms on product – Part 2 : guidance	1996	C 181 of 1999-06-26
CEN	EN 1174-3	Sterilization of medical devices - Estimation of the population of micro-organisms on product – Part 3 : guide to the methods for validation of microbiological techniques	1996	C 181 of 1999-06-26
CEN	EN 1441	Medical devices – risk analysis	1997	C 181 of 1999-06-26
CEN	EN ISO 10993-1	Biological evaluation of medical devices - Part 1: Evaluation and testing (ISO 10993-1:1997)	1997	C 181 of 1999-06-26
CEN	EN ISO 10993-5	Biological evaluation of medical devices - Part 5: Tests for in vitro cytotoxicity (ISO	1999	C 288 of 1999-10-09

		10993-5:1999)		
CEN	EN ISO 10993-9	Biological evaluation of medical devices – Part 9: Framework for identification and quantification of potential degradation products (ISO 10993-9:1999)	1999	C 227 of 1999-08-10
CEN	EN ISO 10993-10	Biological evaluation of medical devices - Part 10 : tests for irritation and sensitization (ISO 10993-10:1995)	1995	C 181 of 1999-06-26
CEN	EN ISO 10993-12	Biological evaluation of medical devices - Part 12 : sample preparation and reference materials (ISO 10993-12:1996)	1996	C 181 of 1999-06-26
CEN	EN ISO 10993-13	Biological evaluation of medical devices - Part 13: Identification and quantification of degradation products from polymeric medical devices (ISO 10993-13:1998)	1998	C 227 of 1999-08-10
CEN	EN ISO 10993-16	Biological evaluation of medical devices – Part 16: toxicokinetic study design for degradation products and leachables (ISO 10993-16:1997)	1997	C 181 of 1999-06-26
CEN	EN 30993-3	Biological evaluation of medical devices - Part 3 : tests for genotoxicity, carcinogenicity and reproductive toxicity (ISO 10993-3:1992)	1993	C 181 of 1999-06-26
CEN	EN 30993-4	Biological evaluation of medical devices - Part 4 : selection of tests for interactions with blood (ISO 10993-4:1992)	1993	C 181 of 1999-06-26
CEN	EN 30993-5	Biological evaluation of medical devices - Part 5 : tests for cytotoxicity - in vitro methods (ISO 10993-5:1992)	1993	C 181 of 1999-06-26
CEN	EN 30993-6	Biological evaluation of medical devices - Part 6: Tests for local effects after implantation (ISO 10993-6:1994)	1994	C 181 of 1999-06-26
CEN	EN 30993-7	Biological evaluation of medical devices - Part 7: ethylene oxide sterilisation residuals (ISO 10993-7:1995)	1995	C 293 of 2000-10-14
CEN	EN 30993-11	Biological evaluation of medical devices - Part 11: tests for systemic toxicity (ISO 10993-11:1993)	1995	C 181 of 1999-06-26
CEN	EN 45502-1	Active implantable medical devices – Part 1: General requirements for safety, marking and information to be provided by the manufacturer	1997	C 268 of 1998-08-27
CEN/ CENELEC	EN 46001	Quality systems - Medical devices - Particular requirements for the application of EN ISO 9001	1995	C 181 of 1999-06-26
CEN/ CENELEC	EN 46002	Quality systems - Medical devices - Particular requirements for the application of EN ISO 9002	1995	C 181 of 1999-06-26
CEN/ CENELEC	EN 46003	Quality systems - Medical devices - Particular requirements for the application of EN ISO 9003	1999	C 293 of 2000-10-14

CENELEC	EN 50103	Guidance on the application of EN 29001 and EN 46001 and of EN 29002 and EN 46002 for the active (including active implantable) medical device industry	1994	C 181 of 1999-06-26
CENELEC	EN 60601-1	Medical electrical equipment. Part 1: General requirements for safety - IEC 601-1:1988	1990	C 181 of 1999-06-26
CENELEC	Amendment A1 to EN 60601-1	Medical electrical equipment. Part 1: General requirements for safety - IEC 601-1:1988/A1:1991	1992	C 181 of 1999-06-26
CENELEC	Amendment A2 to EN 60601-1	Medical electrical equipment. Part 1: General requirements for safety - IEC 601-1:1988/A2:1995 + corrigendum Jun. 1995	1995	C 181 of 1999-06-26
CENELEC	Amendment A13 to EN 60601-1	Medical electrical equipment. Part 1: General requirements for safety	1995	C 181 of 1999-06-26