

## INTERPRETATIVE DOCUMENT

Essential Requirement No 3

### "HYGIENE, HEALTH AND THE ENVIRONMENT"

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### HYGIENE, HEALTH AND THE ENVIRONMENT

#### 1. GENERAL

##### 1.1 Purpose and scope

- (1) This Interpretative Document relates to Council Directive 89/106/EEC<sup>(11)</sup> of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products, hereinafter referred to as "the Directive".
- (2) Article 3 of the Directive stipulates that the purpose of the Interpretative Documents is to give concrete form to the essential requirements for the creation of the necessary links between the essential requirements set out in Annex I to the Directive and the mandates for the preparation of harmonized standards and guidelines for European technical approvals or the recognition of other technical specifications within the meaning of Articles 4 and 5 of the Directive.

Where considered necessary, the provisions of this Interpretative Document will be further specified in each particular mandate. In drafting the mandates, account will be taken, if necessary, of the other essential requirements of the Directive, as well as of other relevant Directives concerning construction products.

- (3) This Interpretative Document deals with the aspects of the works where "Hygiene, Health and the Environment" may be concerned. It identifies products or product families and characteristics relating to their satisfactory performance.

For each intended use of the product, the mandates will indicate in further detail which of those characteristics shall be dealt with in the harmonised specifications, using a step-by-step procedure with CEN/ CENELEC/ EOTA, which will allow the product characteristics to be modified or complemented, if necessary.

Annex I to the Directive gives the following definition of the essential requirement which is applicable when and where the works are subject to regulations containing such a requirement: "The construction work must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants or neighbours, in particular as a result of any of the following:

- the giving-off of toxic gas,
- the presence of dangerous particles or gases in the air,
- the emission of dangerous radiation,

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<sup>(11)</sup> OJEC L40 of 11.2.1989

- pollution or poisoning of the water or soil,
- faulty elimination of waste water, smoke, solid or liquid wastes,
- the presence of damp in parts of the works or on surfaces within the works."

(4) In accordance with the Council Resolution of 7 May 1985 (New Approach) and the preamble to the Directive, this interpretation of the essential requirement is intended not to reduce the existing and justified levels of protection for works in the Member States.

## 1.2 Levels or classes for essential requirements and for related product performances

1.2.1 Where differences specified in Article 3(2) of the Directive are identified and justified in conformity to Community law, classes for essential requirements and for related product performances may be necessary. The purpose of such classes is to achieve the free circulation and free use of construction products.

In this case such classes shall be determined either in the interpretative document or according to the procedure provided for in by Article 20(2)(a) of the Directive. Where through this procedure a classification of product performance is identified as the means of expressing the range of requirement levels of the work, the Commission will within the mandate request CEN, CENELEC or EOTA to make the appropriate proposal.

The range of requirement levels covered by the classes depends on the existing and justified levels encountered in Member States.

In cases where a Member State determines in conformity to Article 6(3) of the Directive among the classes only one or some classes to be observed in its territory (or part of it), it shall do so only on the basis of the differences specified in Article 3(2) of the Directive.

1.2.2 Where justified differences specified in Article 3(2) of the Directive are not identified, classes (or levels) of product performances may also be used by the standardizers as a means of convenience for specifiers, manufacturers and purchasers. For certain products, classes (or levels) make it easier to use the standard to relate product performance to its intended use.

Such performance classes (or levels) for products may with reference to Article 4(1) of the Directive therefore be established by the standardizers who will keep the Commission and the Standing Committee informed of the ongoing work on this matter in the framework of the execution of mandates.

1.2.3 Each time classes are defined for works or for products, it is necessary to set up a class called "no performance determined" when and where at least one Member State has no legal requirement at all in that field.

### 1.3 Meaning of general terms used in the Interpretative Documents

#### 1.3.1 **Construction works**

"Construction works" means everything that is constructed or results from construction operations and is fixed to the ground. This term covers both **buildings** and **civil engineering** works. In the Interpretative Documents "construction works" are also referred to as the "works". Construction works include for example: dwellings; industrial, commercial, office, health, educational, recreational and agricultural buildings; bridges; roads and highways; railways; pipe networks; stadiums; swimming pools; wharfs; platforms; docks; locks; channels; dams; towers; tanks; tunnels; etc.

#### 1.3.2 **Construction products**

- (1) This term refers to products which are produced for incorporation in a permanent manner in the works and placed as such on the market. The terms "construction products" or "products", where used in the Interpretative Documents, include materials, elements and components (single or in a kit) of prefabricated systems or installations which enable the works to meet the essential requirements.
- (2) Incorporation of a product in a permanent manner in the works means:
  - that its removal reduces the performance capabilities of the works; and
  - that the dismantling or the replacement of the product are operations which involve construction activities.

#### 1.3.3 **Normal maintenance**

- (1) Maintenance is a set of preventive and other measures which are applied to the works in order to enable the works to fulfil all its functions during its working life. These measures include cleaning, servicing, repainting, repairing, replacing parts of the works where needed, etc.
- (2) Normal maintenance generally includes inspections and occurs at a time when the costs of the intervention which has to be made are not disproportionate to the value of the part of the works concerned, consequential costs being taken into account.

#### 1.3.4 **Intended use**

The intended use of a product refers to the role(s) that the product is intended to play in the fulfilment of the essential requirements.

#### 1.3.5 **Economically reasonable working life**

- (1) The working life is the period of time during which the performance of the works will be maintained at a level compatible with the fulfilment of the essential requirements.
- (2) An economically reasonable working life presumes that all relevant aspects are taken into account, such as:
  - costs of design, construction and use;
  - costs arising from hindrance of use;
  - risks and consequences of failure of the works during its working life and costs of insurance covering these risks;
  - planned partial renewal;
  - costs of inspections, maintenance, care and repair;
  - costs of operation and administration;
  - disposal;
  - environmental aspects.

#### 1.3.6 **Actions**

Actions which may affect the compliance of the works with the essential requirements are brought about by agents acting on the works or parts of the works. Such agents include mechanical, chemical, biological, thermal and electro-magnetic agents.

#### 1.3.7 **Performance**

Performance is a quantitative expression (value, grade, class or level) of the behaviour of a works, part of the works or product, for an action to which it is subject or which it generates under the intended service conditions (for the works or parts of works) or intended use conditions (for products).

## 2. **EXPLANATION OF THE ESSENTIAL REQUIREMENT "HYGIENE, HEALTH AND THE ENVIRONMENT"**

This Interpretative Document identifies aspects of works where hygiene, health and the environment may be concerned, and identifies products and product families, and characteristics relating to their satisfactory performance where harmonized standards are required.

For the purpose of establishing the suitability of products, Annex I to the Directive gives the following definition of the Essential Requirement which is applicable where the works are subject to regulations containing such a requirement:

**"Hygiene, Health and the Environment"**

The construction work must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants or neighbours, in particular as a result of any of the following:

- the giving-off of toxic gas
- the presence of dangerous particles or gases in the air
- the emission of dangerous radiation
- pollution or poisoning of the water or soil
- faulty elimination of waste water, smoke, solid or liquid wastes
- the presence of damp in parts of the works or on surfaces within the works.

Other Directives relevant to hygiene, health or the environment, for example, the protection of workers, must also be taken into account when elaborating technical specifications, harmonized standards, etc.

In the present document, the requirement is developed according to five specific aspects:

- Indoor environment
- Water supply
- Waste water disposal
- Solid waste disposal
- Outdoor environment

Noise protection is dealt with in another Interpretative Document.

The Directive applies to all works, including buildings and civil engineering works, where such works are subject to regulations. The Essential Requirement on Hygiene, Health and the Environment concerns all such works where the hygiene or health of the occupants, the users or neighbours is concerned.

The nature of such threats can vary considerably according to the type of the works. The present document mainly develops the aspects linked with buildings intended for occupation, with no limitation on the period of occupation. However, for some aspects of the essential requirement, specific provisions for works other than buildings and corresponding products are stated in the relevant sub-chapters. Nevertheless, for works and products which are not mentioned in this Interpretative Document, specific provisions should be added when elaborating mandates, on condition that the basic statements of this Interpretative Document are satisfied.

The forms of pollution and the pollutants that are considered in this document may be the cause of several undesirable health effects, ranging from discomfort and sensorial annoyance to severe health injuries. For some of them, information on the health effects is incomplete or inconclusive. As improved knowledge becomes available, relevant requirements may be revised.

### **3. BASIS FOR THE VERIFICATION OF THE SATISFACTION OF THE ESSENTIAL REQUIREMENT "HYGIENE, HEALTH AND THE ENVIRONMENT"**

#### **3.1 General**

- (1) This chapter identifies basic principles prevailing in Member States for the verification of the satisfaction of the essential requirement "Hygiene, Health and the Environment". These principles are currently complied with when and where the works are subject to regulations containing this essential requirement. Chapter 4 provides guidance on how to meet this essential requirement by compliance with the technical specifications referred to in Article 4 of the Directive.
- (2) The essential requirement, as far as applicable, is satisfied with acceptable probability during an economically reasonable working life of the works.
- (3) The satisfaction of the essential requirement is assured by a number of interrelated measures concerned in particular with:
  - the planning and design of the works, the execution of the works and necessary maintenance;
  - the properties, performances and use of the construction products.
- (4) It is up to the Member States, when and where they feel it necessary, to take measures concerning the supervision of planning, design and execution of the works, and concerning the qualifications of parties and persons involved. Where this supervision and this control of qualifications are directly connected with the characteristics of products, the relevant provisions shall be laid down in the context of the mandate for the preparation of the standards and guidelines for European technical approval related to the products concerned.

#### **3.2 Actions**

The various actions which are taken into account for assessing the satisfaction of the Essential Requirement are indicated in the various sub-chapters of Chapter 3.3 in relation to the specific aspects they apply to.

### 3.3 Verification of the satisfaction of the essential requirement

#### 3.3.0 **Introduction**

This chapter presents the nature and the ways for the control of the various specific aspects of the Essential Requirement, describes the technical specifications for the works when relevant and specifies the characteristics of the products.

All the product characteristics listed in the following may be of importance with respect to Hygiene, Health and the Environment, in general. However, for specific products, only one or more of these characteristics are relevant and therefore others may be left out of consideration.

Additional characteristics (e.g. ease of cleaning) may be asked for in the mandates for reasons of hygiene for special production work (e.g. food storage or food preparation).

#### 3.3.1 **Indoor environment**

##### 3.3.1.0 Introduction

The requirement is concerned with providing a healthy indoor environment for occupants and users of works.

The design and execution of construction work should take into account:

- thermal environment
- lighting
- air quality
- dampness
- noise.

Heating, cooling and ventilation are covered by the present Interpretative Document.

Certain aspects of thermal environment and lighting are covered by Interpretative Documents "Safety in use" and "Energy Economy and Heat Retention".

Other aspects of lighting, e.g. the minimal window area versus the floor area of a room for dwelling and working may be relevant for construction products like prefabricated houses.

Noise protection is covered by the Interpretative Document "Protection Against Noise".

### 3.3.1.1 Air quality

#### 3.3.1.1.1 **Nature of the requirement**

The requirement is concerned with the elimination or control of pollutants in the indoor environment. In the following text, "pollutant" includes gamma radiation (although strictly it is not an airborne pollutant).

The construction works must provide a healthy indoor environment for occupants and building users, taking account of pollutants including:

- metabolic products, for example: water vapour, carbon dioxide and body odour, etc.
- combustion products, for example: water vapour, carbon monoxide, oxides of nitrogen, carbon dioxide and hydrocarbons, etc.
- tobacco smoke
- volatile organic compounds, for example: formaldehyde, solvents, etc.
- non-viable particulates, for example: respirable and non-respirable suspended particulates and fibres
- viable particulates including micro-organisms, for example: small insects, protozoa, fungi, bacteria and viruses
- radon and radioactive substances emitting gamma radiation.
- emission from electric and electronic equipment (ozone, etc.)

These may be the cause of undesirable effects, ranging from discomfort and nuisance to adverse physical effects on health.

Pollutants from all sources need to be taken into account in providing methods for controlling air quality, such as ventilation.

Unhealthy indoor air can be caused by pollutants generated by:

- building materials
- building services, including combustion appliances
- furnishings and fittings
- sources in the outside air
- the soil beneath the building
- processes and activities being undertaken within the building including, for example, cleaning, maintenance, painting, polishing, control of pests, cooking, etc.
- human and animal occupation and plants
- hot water systems

### 3.3.1.1.2 **Control of pollutants**

#### 3.3.1.1.2.1 Pollutants can be controlled by:

##### **Control of sources**

Eliminating or limiting the use of materials which may release pollutants, and the use of which results in concentrations greater than acceptable limits.

Eliminating or limiting the release of pollutants into the air by

- Sealing the source, e.g. providing suitable barriers to reduce or eliminate emissions from the source to the inside air.
- Design and adequate maintenance of appliances to reduce release of pollutants.
- Design of products and construction to avoid or reduce sources of pollutants.
- Use of fungicides or other biocides to eliminate the source of viable particulates, when design measures are not applicable.

##### **Control of air by ventilation, filtration or absorption**

- Mechanical ventilation
- Passive ventilation
- Filtration of indoor air or incoming air
- Absorption from indoor air or incoming air.

##### **Control of exposure of people by procedural controls, e.g. excluding re-entry for a specified time after repainting.**

#### 3.3.1.1.2.2 Requirements are expressed in a number of different ways:

Acceptable average and peak concentrations of specific pollutants in the indoor air.

The prohibition or limitation of use of named substances generally or for specific uses.

Limitations on the rates of release and nature of pollutants from materials or products.

Specification of acceptable methods of sealing or providing barriers.

Specification of ventilation rates or parameters expressing the rate of renewal of indoor air by fresh air, for example air exchange rate or air leakage characteristics, etc.

Specification of suitable area of openings to be provided in the outer envelope provision of mechanical ventilation systems and other descriptions of designs and constructions that have been found to be satisfactory.

Appropriate levels of factors influencing concentrations such as temperature, humidity, etc., e.g. condensation (*see clause 3.3.1.2.2*)

Acceptable measurement and/or calculation methods for determining indoor air quality and the performance of control methods.

### 3.3.1.1.3 **Technical specifications**

#### 3.3.1.1.3.1 Construction works (category A)

Requirements for indoor air quality may be expressed in terms of a calculation procedure defining acceptable concentrations in the indoor air of certain pollutants, or by direct measurement of some pollutants. The performance of methods of control, e.g. ventilation may be determined by calculation methods or by measurement.

Requirements are also expressed in terms of design requirements for building services, e.g. ventilation systems.

Harmonized technical specifications may be needed to support these methods as follows:

#### **Calculation methods**

Methods of predicting air exchange rate taking into account the climatic conditions and provisions for ventilation.

Methods for calculating concentrations of indoor pollutants, taking into account the normal loading of the room by the product, release from the products, air exchange rates, air temperature and air humidity.

Methods for assessing the performance of control methods defined in clause 3.3.1.1.2.

#### **Measurement methods**

Methods for measuring ventilation rates in buildings.

Methods of determining the efficiency of ventilation.

Methods for identifying indoor pollutants and measuring their concentrations.

### 3.3.1.1.3.2 Construction products (category B)

The following product families (including building materials) are involved in the control of indoor air quality. The characteristics necessary for satisfactory performance in relation to health, hygiene and the environment are listed below. Harmonized technical specifications are required to measure these characteristics or to calculate performance where technology permits. Where appropriate, on-site tests may be necessary (e.g. for combustion appliances). The corresponding standards should take account of the intended use of the product.

Product characteristics listed for building materials apply to all product families and systems.

#### **a) Building materials**

Products are those for which emissions of pollutants to the indoor air are possible. Such products include materials used for flooring, partitions, walls and wall linings, ceilings, insulating materials, paints and varnishes, timber preservatives, adhesives, fillers, damp-proof membranes, electric cables and fittings, coatings for floor screeds, masonry, putties, installations, etc. Product characteristics apply to all product families and systems

- emission of volatile organic compounds and release of other pollutants, taking account of the concentration of pollutants in the product where necessary
- susceptibility to the growth of harmful micro-organisms
- radioactive emissions

#### **b) Air-conditioning and ventilation systems**

##### *b.1) Humidifiers and dehumidifiers*

Products include plant for controlling humidity in air in, or supplied to, occupied buildings.

- effectiveness in control of water vapour

##### *b.2) Filtration systems*

Products include air cleaning devices for general ventilation in central systems, window air-conditioners, packaged air-conditioners, and room filters.

- airflow rate and pressure difference performance
- effectiveness in removing substances from the air.

### *b.3) Other air-conditioning and ventilation components and systems*

Products include purpose-made ventilation openings, single room extract fans, passive stack ventilation systems, mechanical ventilation systems, air-conditioning systems (as for instance heat exchangers, mixing chambers, volume flow control systems, air ducts and associated components. Also pumps and other equipment for removing pollutants from subsoil).

- airflow, air velocity, and pressure difference performance, including performance of complete systems and their components

### **c) Combustion equipment**

Relevant products are: all combustion equipment used for room heating and water heating and cooking, for example: combustion appliances (with and without connection of flues), air inlets, fail-safe devices and other control equipment, flues and chimneys, etc.

- release of combustion products from appliances during normal use, taking account of ventilation provision in buildings
- dimensioning and integrity of flues
- effectiveness of removing combustion products
- effectiveness of fail-safe mechanisms
- provision of adequate air supply
- integrity of fuel supply pipes

### **d) Barriers and sealants**

#### *d.1) Barriers and surface sealing coatings*

Products include membranes and sealing coatings to prevent emissions of particles and fibres and other pollutants from surfaces, and preservatives and fungicides to prevent the growth of micro-organisms and fungi.

- effectiveness in reducing release of specific pollutants

#### *d.2) Sealants*

Products include mastics and other types of material and draughtstrips and materials used to seal gaps and cracks to prevent the passage of gas, liquid and vapour.

- air leakage when installed
- effectiveness in sealing gaps.

**e) Hot water storage and supply (with particular reference to the hazard of Legionnaires' disease)**

Products include tanks, water softeners, taps, shower heads, washers, seals, valves, calorifiers, pumps, heating boilers, cisterns, temperature controls, pipework.

- adequate and accurate temperature control
- design to facilitate cleaning and chemical treatment
- design to minimize the production of aerosols
- design to minimize water stratification (in circumstances which encourage the growth of legionella)
- minimization of static water.
- design to avoid materials which provide nutrients.

**3.3.1.2 Dampness**

**3.3.1.2.1 Nature of the requirement**

The requirement is concerned with the protection of the health of occupants and users from the effects of excessively low or high dampness.

The construction work must be designed and built in such a way that it will not be a threat to the hygiene, health and the environment of the occupants and users as a result of dampness. Such requirements must, subject to normal maintenance, be satisfied for an economically reasonable working life.

Dampness may affect the health of occupants and building users through:

- the effects of excessively low or high relative humidity in the air
- the indirect effects of dampness inducing mould growth on surfaces and inside products and increased deposit of house dust mites.

**3.3.1.2.2 Control of dampness**

**3.3.1.2.2.1 Humidity in the air in a work may be controlled by:**

- increasing or decreasing air temperature (heating, insulation, cooling)
- ventilation of rooms (natural or mechanical)
- humidification and dehumidification of indoor air and incoming air
- removal or reduction of moisture at source or isolation of moisture generating activities

### 3.3.1.2.2.2 Dampness on indoor surfaces and/or inside building products may be controlled by:

#### **Moisture proofing from outside damp**

- \* avoiding or preventing infiltration and penetration of rain, snow, etc. into the works
- \* avoiding or preventing infiltration and penetration of ground water in the work
  - Walls and roofs: walls should prevent moisture from the ground from entering the building and not carry moisture from the ground to any part which would be damaged by it. External walls and roofs should also resist the penetration of rain and snow to the inside of the building; they should not be damaged by rain and snow and not carry rain and snow to any part which would be damaged by it.
  - Cladding for external walls and roofs:  
Cladding materials may be:
    - impervious (lets no water or vapour through).
    - weather resisting (absorbs water).
    - moisture resisting (permeable to water vapour).
  - Floors next to the ground should prevent ground moisture from reaching the upper surfaces of the floor. It should not be damaged by moisture from the ground.

#### **Avoiding condensation on indoor surfaces and interstitial condensation.**

Surface condensation is prevented by ensuring that the relative humidity of the air close to the surface is below acceptable levels. This is achieved by appropriate combination of heating, insulation and ventilation.

Fungicidal surface treatment may, in certain cases, help to prevent mould growth; however, this treatment is usually a temporary measure used when design measures to avoid dampness are not applicable.

Interstitial condensation is prevented by ensuring that the vapour pressure within the elements is below the saturated vapour pressure. This is achieved by the suitable design of products and choice of materials. If deposition cannot be prevented, it should be within acceptable limits, taking account of the sensitivity of materials used, their position within the product and the time required for evaporation.

### 3.3.1.2.3 **Technical specifications**

#### 3.3.1.2.3.1 Construction works (category A)

Harmonized technical specifications may be needed for the:

##### **Control of humidity in the air of the work**

Reference methods to calculate the humidity level as a function of the climatic conditions, the damp production rate, the products used and the ventilation rates depending on the type of the works and the use of the works or room.

##### **Moisture proofing from inside dampness**

Reference methods to calculate the expected condensation on surfaces and inside products, the calculation of the amount of condensation water and the expected rate of evaporation taking into account, if needed, different levels of climatic conditions and ventilation rates.

#### 3.3.1.2.3.2 Construction Products (category B)

The following products or product families are involved in dampness control.

The characteristics necessary for satisfactory performance in relation to health and hygiene are listed below.

Harmonized technical specifications are required to measure these characteristics or to calculate performance where technology permits, taking into account the type of works, their use, the intended use of the products and the climatic and ground water conditions.

##### **a) Heating equipment (see also Interpretative Document "Energy Economy and Heat Retention")**

Products include boilers and heating apparatus, radiators, heat emitters, heating control devices

- output and heat transfer characteristics

##### **b) Air-conditioning and ventilation equipment**

Products, *see list in clause 3.3.1.1.3*, excluding humidifiers.

- airflow and pressure difference performance
- rate and control of water vapour production and reduction respectively.

### c) **Insulating materials**

Products are used to insulate elements separating heated rooms from rooms having lower temperature, like walls to the outside or to staircases, windows, roofs and ground floors.

Thermal characteristics and design aspects (see Interpretative Document "Energy Economy and Heat Retention").

### d) **Fungicides for surface treatment**

- effectiveness

### e) **Building products**

Products include all building elements exposed to precipitation (rain, snow, hail), ground water and other damp from outside, such as walls, windows, roofs and ground floors as well as their components and materials for lining, insulation, damp-proof membranes, paints and varnishes, sealants, etc.

#### *e.1) Walls, walling materials*

- vapour permeability
- moisture resistance
- watertightness, water diffusivity
- thermal characteristics - (see Interpretative Document "Energy Economy and Heat Retention").

#### *e.2) Curtain walling, cladding materials, cladding systems*

- Vapour permeability
- watertightness
- resistance of joints to penetration of rain and snow

#### *e.3) Roofs, roofing materials*

- vapour permeability
- capacity of adsorption, -absorption, -desorption
- moisture resistance
- watertightness, water diffusivity
- thermal characteristics (see Interpretative Document on "Energy Economy and Heat Retention").

*e.4) Ground floors (solid, suspended), basement floors*

Products include concrete, hardcore material, insulation

- moisture resistance
- thermal characteristics see Interpretative Document on Energy Economy and Heat Retention
- vapour permeability

*e.5) Damp proof courses, damp proof membranes*

Products include slates, polythene, pitch polymer, sheet copper, engineering bricks, chemical injection fluid

- Vapour permeability
- moisture resistance
- watertightness, water diffusivity

*e.6) vapour proof membranes*

- vapour permeability
- moisture resistance

*e.7) Insulation material, including cavity insulation*

- vapour permeability
- performance of joints
- moisture resistance
- thermal characteristics and design aspects (see Interpretative Document on "Energy Economy and Heat Retention").

*e.8) copings*

- resistance to water,
- performance of joints

*e.9) damp proof trays*

- imperviousness to water.

**3.3.2 Water supply****3.3.2.1 Nature of the requirement**

The requirement is concerned with the protection of consumers' health related to water and water supply characteristics.

Water supplied for human consumption shall not constitute any identified health risk to the consumers' health when used as follows:

- water for drinking and culinary purposes
- water for domestic use
- water used in a food production intended for human consumption

Beside national requirements, the characteristics of water at the draw-off tap are also laid down in Council Directive 80/778/EEC of 15 July 1980.

Storage tanks, pipes, fittings and other components in contact with water and additional treatment (e.g. reheating, softening, disinfection, etc.) shall not modify water characteristics in such a way that it may be a risk for consumers health.

The following points are to be taken into account:

- protection against mixing with waste water or foul air and mixing with any unsuitable external liquid or other contaminants,
- protection against contamination with mineral or organic pollutants, generated by components in contact with water resulting from migration and/or corrosion,
- protection against microbiological contamination,
- protection against contamination with external mineral or organic pollutants resulting from permeability and or penetration.

#### 3.3.2.2 Control of water supply

Mixing with polluted water or foul air may be prevented by controlling back-flow with appropriate preventers.

Mixing with external liquid or other contaminants may be prevented by controlling the watertightness of the products used as components of the supply systems, and avoiding passing systems through hazardous areas.

Contamination with mineral or organic pollutants generated by components in contact with water may be prevented by limiting:

- migration of pollutants from materials
- pollutants resulting from corrosion, ageing and erosion.

Contamination with external mineral or organic pollutants may be prevented by limiting permeability.

Different ways can be used to prevent microbiological contamination, including use of chemicals, design of water systems avoiding dead zones, diminution of organic matter content in water, etc. The use of materials which do not favour excessively microbiological growth on surfaces in contact with water must also be considered.

### 3.3.2.3 Technical specifications for construction products (category B)

Harmonized technical specifications are required to specify the following characteristics of construction products:

- a) Material in contact with water
  - migration of pollutants
  - criteria for the growth of micro-organisms (geometrical forms)
- b) Pipes, fitting and joints
  - tightness
  - resistance to corrosion
  - resistance to abrasion
  - permeability to pollutants
- c) Back-flow devices
  - effectiveness
  - flow or pressure drop
  - mechanical endurance
- d) Valves and taps
  - resistance to corrosion
  - resistance to abrasion
  - mechanical endurance
  - flow rate
  - effectiveness
- e) Cisterns and tanks
  - tightness
  - resistance to corrosion
  - water capacity
- f) On line appliances
  - water capacity
  - water consumption

g) Other products

For products incorporated in water supply works and not included in the above list, the provisions stated in clause 3.3.3.2 "Control of water supply" must be complied with, when relevant.

3.3.3 **Waste water disposal**

3.3.3.1 Nature of the requirement

The requirement is concerned with the protection of people and the immediate environment against pollutants transported in waste water disposal systems.

The construction works must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants, users or neighbours as a result of faulty disposal.

Waste water includes all substances disposed of through the discharge systems including waste water, rain water and foul air from systems.

The following points are concerned:

- Leakage of fluids into and from the systems.
- Sewage back flow in buildings.
- Giving-off of foul air.
- Microbiological contamination.

3.3.3.2 Control of waste water disposal

Leakage of fluids from the systems may be prevented by controlling the watertightness of all the components of the systems.

Sewage back-flow in buildings may be prevented by appropriate design of works including if necessary the use of back-flow preventers.

Giving off of foul air may be prevented by controlling the airtightness of the discharge components. Systems must be designed or specific devices must be included to allow the introduction of fresh air into the system and to avoid discharge of foul air into or near inhabited areas. Sewerage components must be designed to avoid any stagnation of sewage.

Microbiological contamination concerns mainly sanitary appliances and may be prevented by controlling cleanability and characteristics of the materials' surfaces.

### 3.3.3.3 Technical specifications for construction products (category B)

Harmonized technical specifications are required to specify the following characteristics of construction products:

- Pipes, fittings, connections, manholes and joints
  - watertightness
  - resistance to corrosion
  - air tightness of discharges (non-release of foul air)
- Back-flow devices
  - effectiveness
  - mechanical endurance
- Sanitary appliances
  - cleanability
  - shape and size to facilitate self-cleaning
- On-site treatment equipment
  - watertightness
  - resistance to corrosion
  - effectiveness of treatment
- Other products

For products incorporated in waste water works and not included in the above list, the provisions stated in clause 3.3.3.2 "Control of waste water disposal" must be complied with, when relevant.

### 3.3.4 **Solid waste disposal**

#### 3.3.4.1 Nature of the requirement

The construction work must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants, users or neighbours as a result of faulty disposal of solid waste. Such requirements must, subject to normal maintenance, be satisfied for an economically reasonable working life.

For the purposes of this document, solid waste means all solid and semi-solid substances or objects that are generally known as household waste or domestic refuse, including small quantities of toxic matters that may be generated in works.

Industrial, toxic, and dangerous solid waste are excluded.

The requirement is concerned with the protection of people inside works and in their vicinity against undesirable matters, objects or living organisms contained in solid wastes.

The hazards may arise from:

- infiltration of pollutants to groundwater
- production of smokes, presence of disgusting or nauseating smells and liquids during fermentation in contact with air,
- scattering of waste by animals or wind, with possible spread of infection,
- breeding of flies, other insects, and rodents, the role of which may be of great importance in the spread of disease.

Fire caused by inappropriate storage of solid waste, as well as noise from fixed or mobile equipment for storage, collection, and treatment may pose problems.

#### 3.3.4.2 Control of solid waste disposal

Production and release of smoke, smells and liquids, as well as scattering and dispersion of waste can be controlled by ensuring tightness of all the components and their covers in operation for the storage and the collection of solid waste.

Fermentation may be abated by conditioning of waste in storage containers and by minimizing the time of retention in the various stages of disposal.

Components shall be properly designed so as to avoid residual waste in use and after evacuation and to facilitate cleaning.

#### 3.3.4.3 Technical specifications for construction products (Cat B)

Category B harmonized technical specifications are required for the following product families :

- Storage products: containers (fixed elements), complements to containers, chute-feed bulk storage products.
  - shape and size to facilitate cleaning
  - tightness of containers and covers
- Collection products: chutes, pipeline collection systems
  - tightness

### 3.3.5 **Outdoor environment**

#### 3.3.5.0 General

The effect of construction products on the environment is one of the aspects of importance for the harmonization of standards. Construction products should not release pollutants and waste streams which can be dispersed in the environment and cause changes in environmental quality, resulting in risks for the health of human beings, animals and plants and endangering the balance of the ecosystems. The impact on the environment should be considered in every phase of the life cycle of construction materials and including:

- winning, production, building process,
- works in use,
- demolition, waste-deposition, incineration or waste reuse.

In order to prevent future damage to the environment, assessment of construction products throughout their life cycle should be taken into account. To conform with the scope of the Directive this document is restricted to "works in use".

For the other phases of the life cycle, as described above, as long as no Community legislation exists it is up to the Member States, with due observance of the Treaty, to take into account the scope of the Directive and when they deem it necessary, to prescribe requirements affecting construction products in order to limit the deterioration of the environment.

#### 3.3.5.1 Nature of the requirement

The construction work shall not release pollutants in quantities which may impair the health and hygiene of occupants, users or neighbours.

The requirement is concerned with the protection of people and with the prevention of any impact on the immediate environment by pollution of the air, the soil and the water. These pollutions can be generated by:

- building materials,
- building services, including combustion appliances,
- installations.

#### 3.3.5.2 Control of the impact of construction works on the outdoor environment

The impact of construction works on the outdoor environment may be controlled by:

- limitation of dispersion of pollutants

- limitation of emissions of pollutants
- limitation of the use of materials, building services or installations which release pollutants

Requirements for the prevention or limitation of the environmental impact of works on the air, soil and water may be expressed by

- measurement methods or calculation methods, where appropriate, of leaching, dispersion or emissions of pollutants
- proper design of works

### 3.3.5.3 Technical specifications for construction products (Category B)

Technical specifications are required to define the following characteristics:

- Building materials used in foundations, piles, external walls, external floors, roofs, granular materials.
  - release of pollutants to outdoor air, soil and water, taking account of the concentration of pollutants in the product, where necessary.
  - release reducing factor by sealing
- Vessels for storage of polluting substances and including sealing systems
  - release of pollutants to soil, water and air,
  - tightness
  - effectiveness of alarm systems,
- Combustion equipment, flues and chimneys.
  - release of pollutants to the air,
- Services and systems: air-conditioning and ventilation systems, barriers and sealing systems, pipe systems.
  - release of pollutants to soil, water and air.

## 4. TECHNICAL SPECIFICATIONS AND GUIDELINES FOR EUROPEAN TECHNICAL APPROVAL

### 4.1 General

- (1) "Technical specifications" means those referred to in Article 4 of the Directive. "Guidelines for European Technical Approval" of a product or family of products means those referred to in Article 11 of the Directive.

- (2) A general distinction is made between:
- **Category A:** These are standards which concern the design and execution of buildings and civil engineering works and their parts, or particular aspects thereof, with a view to the fulfilment of the essential requirements as set out in Council Directive 89/106/EEC. Category A standards should be taken into consideration within the scope of the Directive as far as the differences in laws, regulations and administrative provisions of Member States prevent the development of harmonised product standards.
  - **Category B:** These are technical specifications and guidelines for European technical approval which exclusively concern construction products subject to an attestation of conformity and marking according to Articles 13, 14 and 15 of Council Directive 89/106/EEC. They concern requirements with regard to performance and/or other properties, including durability, of those characteristics that may influence the fulfilment of the essential requirements, testing and compliance criteria of a product. Category B standards that concern a family of products, or several families of products are of a different character and are called horizontal (Category B<sub>h</sub>) standards.
- (3) This distinction between Categories A and B is not intended to lay down different priorities for the work on the respective documents but to reflect the difference in the responsibilities of the authorities of Member States and in those of the bodies for European Standardisation and Technical Approval in implementing Directive 89/106/EEC.
- (4) In order to ensure the quality of these documents with a view to the fulfilment of the essential requirement, the provisions of this Interpretative Document will result in specific conditions which will be included in the mandates for the preparation of the respective European standards and guidelines for the European technical approval.
- (5) The assumptions made in Category A standards on the one hand and those made in Category B specifications on the other shall be compatible with each other.
- (6) Category B technical specifications and guidelines for European technical approval shall indicate the intended use(s) of the respective products.

#### 4.2 Performances of Products

- (1) As far as practicable the characteristics of products should be described in performance terms in the technical specifications and guidelines for European technical approval. Methods of calculation, measurement, and testing (where possible), together with compliance criteria, shall be given either in the relevant technical specifications or in references called up in such specifications.

- (2) The expression of the product performances should be compatible with the basis for the verification of the essential requirement as currently in use in Member States and referred to in Chapter 3 and as provided in the European Category A standards referred to in 4.1(2), taking into account the actual implementation of these documents.

#### 4.3 Attestation of conformity of products

- (1) "Attestation of conformity" of products means that the provisions and procedures laid down in Articles 13, 14 and 15 of Annex III to the Directive are followed. These provisions aim to ensure that, with acceptable probability, the performance of a product will be achieved as specified in the relevant technical specification.
- (2) The mandates will include indications concerning the conformity attestation procedures within the framework of Annex III to the Directive and related provisions to be indicated in the technical specifications and guidelines for European technical approval.

### 5. **WORKING LIFE, DURABILITY**

#### 5.1 Treatment of working life of construction works in relation to the essential requirement

- (1) It is up to the Member States, when and where they feel it necessary, to take measures concerning the working life which can be considered reasonable for each type of works, or for some of them, or for parts of the works, in relation to the satisfaction of the essential requirements.
- (2) Where provisions concerning the durability of works in relation to the essential requirement are connected with the characteristics of products, the mandates for the preparation of the European standards and guidelines for European technical approvals, related to these products, will also cover durability aspects.

#### 5.2 Treatment of working life of construction products in relation to the essential requirement

- (1) Category B specifications and guidelines for European technical approval should include indications concerning the working life of the products in relation to the intended uses and the methods for its assessment.
- (2) The indications given on the working life of a product cannot be interpreted as a guarantee given by the producer, but are regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

**INTERPRETATIVE DOCUMENT**  
**"HYGIENE, HEALTH AND THE ENVIRONMENT"**

**A N N E X**

**TABLES**

- I. Indoor environment
  - I.A. Air quality
  - I.B. Dampness
- II. Water supply
- III. Waste water disposal
- IV. Solid waste disposal
- V. Outdoor environment