EUROPEAN COMMISSION
DIRECTORATE-GENERAL V
EMPLOYMENT, INDUSTRIAL RELATIONS AND SOCIAL AFFAIRS
Health and Safety Directorate
O.P. 56/2

Luxembourg, 21 June 1996

M/238

MANDATE TO CEN FOR STANDARDIZATION IN THE FIELD OF FIRE-RESISTANT HYDRAULIC FLUIDS USED FOR POWER TRANSMISSION AND CONTROL (HYDROSTATIC AND HYDROKINETIC)

I BACKGROUND.

I.I Introduction.

European Union policy on protection of workers at work has always been based on prevention. Effective prevention means combatting risks at source by using equipment and products of controlled quality, especially when the working environment is "hostile", as is the case in the steel and metallurgical industries and thermal power stations, where very high temperatures are encountered, and in mines and other underground workings, on vessels or offshore platforms and in aircraft, where lack of space makes working conditions difficult. Evacuation of the workforce in the event of a fire or explosion also involves considerable risks. The objective of worker protection is implemented through a series of measures, both at Community and national level. At Community level the following are particularly important:

(i) The Directives based on Article 100A require harmonization measures for the free movement of goods with a high level of protection for the health and safety of workers and the environment. To this end, Council Directives 89/392/EEC[1], 91/368/EEC[2] and 93/44/EEC[3] on the approximation of the laws of the Member States relating to machinery include provisions for protection against fire and explosion in their annexes setting out "Essential health and safety requirements".

1 OJ L 183, 29.6.1989, p. 9
2 OJ L 198, 22.7.1991, p. 16
3 OJ L 175, 19.7.1993, p. 12

(ii) Toxicity, hygiene and environmental criteria are addressed in other directives such as Council Directives 67/548/EEC[4], 88/379/EEC[5] and 92/32/EEC[6] on the classification, packaging and labelling of dangerous preparations and on the Commission directives adaptng these to technical progress. Increasingly severe restrictions on the use of products containing PCB or PCT have led to the development of readily biodegradable substitute fluids.

(iii) Finally, Council Directive 89/391/EEC[7] and the individual Directives based on Article 118a require employers to take action with a view to:

a) avoiding risks,
b) combating risks at source,
c) replacing the dangerous by the non-dangerous or the less dangerous, and
d) adapting to technical progress.

They also require employers to take the necessary measures for fire-fighting, in particular as regards the spread of fire, adapted to the nature of the activities and size of the undertaking.

In particular, Council Directives 92/91/EEC[8] and 92/104/EEC[9] require employers to take measures and precautions appropriate to the nature of the operation to avoid, detect and combat the starting and spread of fires and explosions. To this end, Section 11.3 in Part C of the Annex to Directive 92/104/EEC refers to the use of fire-resistant hydraulic fluids for the transmission of hydrostatic and/or hydrokinetic mechanical energy to improve the protection of workers in the underground extractive industries. Such hydraulic fluids must satisfy the specifications and test conditions that relate to fire resistance and to hygiene and environmental criteria, having due regard to risk assessment and the risk that is present.

I.2 Scope of this mandate.

This mandate concerns the elaboration of European standards for fire-resistant hydraulic fluids. These standards will not constitute harmonized standards under the New Approach. Neither will they constitute standards implementing Directives based on Article 118A, or the Directives relating to the classification, packaging and labelling of dangerous substances and preparations, or the Directives relating to their use. They are, however, complementary to these regulatory measures, and are capable of contributing to the aims pursued by them.

4 OJ L 196, 16.8.1967, p. 1
5 OJ L 187, 16.7.1988, p. 14
6 OJ L 154, 5.6.1992, p. 1
7 OJ L 183, 29.6.1989, p. 1
8 OJ L 348, 28.11.1992, p. 9
9 OJ L 404, 31.12.1992, p. 10

Thorough investigation of the quality and properties of the fluids used for hydrostatic and hydrokinetic power transmission is important as a means of avoiding risks during the use of the fluids and hence safeguarding workers' safety and health, the environment, and the operational reliability of equipment and industrial installations.

Workers must be protected against risks arising from the onset and propagation of fires and explosions, and against health hazards (toxicity of the fluids themselves or their thermal decomposition products).

The environment must also be protected against the possible effects of such fluids, in particular those arising from poor biodegradability, ecotoxicity of fluids and bioaccumulation of their components.

Finally, equipment and industrial installations must be protected against damage, and especially against fire damage.

I.3 Context and historical background.

The Conference on Safety in Coal Mines, convened following a decision of the Council of Ministers as long ago as 6 September 1956, recommended that research should be continued with the object of developing incombustible fluids to be used in place of inflammable oils for mechanical purposes, e.g., in hydraulic equipment, couplings, props, etc.

The Commission began work on these problems in 1958, launching a large number of studies and research projects in this area. On the basis of these activities and of other experience, experts drawn from among users, laboratories (testing centres) and representatives of the authorities of the Member States elaborated specifications and testing conditions for fire-resistant fluids (FR-fluids) used for power transmission and control. The specifications provided a means for assessment of the quality characteristics of these fluids, determining whether they satisfy the technical and safety requirements appropriate to the risks to which they may be subject, and eventually approval of fire-resistant fluids.

The specifications were adopted in the form of Reports by the Safety and Health Commission for the Mining and Other Extractive Industries – consisting of government, employer and worker representatives. Seven documents were thus adopted by the Safety and Health Commission, the first in 1960 and the latest – the Seventh Edition – is set out in a document (Doc. No 4746/10/91) which was approved by the Safety and Health Commission – at its plenary session of 3 March 1994. The content encompasses the fire-resisting properties of fluids, their toxicity to humans and their ecotoxicity to the environment and the technological properties necessary to ensure the reliable operation of equipment.

Fire-resistant fluids approved on the basis of these specifications and testing conditions were widely used from the outset in underground coal mines. For several years the use of such fluids has also been regarded as important in many other industries where high temperatures are encountered (e.g. the metallurgical and steel industries, motor vehicle construction and the aeronautical industry).

In view of the interest shown by industry, the Safety and Health Commission suggested to the European Commission, when the former adopted its document (7th Edition FR fluids) on 3 March 1994, that the document be forwarded to CEN for use as a basis for preparing a European Standard.

I.4 The technical basisERROR! BOOKMARK NOT DEFINED.

Document No 4746/10/91, as amended in 1994, adopts a very comprehensive approach to fire-resistant fluids, covering

a) fluid ignitability,
b) health and toxicity,
c) technological properties and
d) protection of the environment.

All these areas have been covered in an appropriate and thorough manner.

With regard to fire resistance properties, a new "stabilized flame heat release" spray test provides a quantitative, graded ranking in terms of fire-resistance properties of all hydraulic fluids and of synthetic fluids in concentrated form or containing a higher proportion of water than mineral oil.

The toxicity and health criteria are those already established. However, the thermal decomposition test establishes whether toxic gases such as HCN, ethylene oxide, etc. are produced during any thermal decomposition of the fluid in service.

Consideration must be given to pollution of the aquatic environment by the use of such fluids. Substantial quantities may become mixed with water which subsequently finds its way into watercourses.

Account must also be taken of the suitability of these fluids for environmentally satisfactory disposal.

II. DESCRIPTION OF THE MANDATED WORKERROR! BOOKMARK NOT DEFINED.

The European Commission requests CEN to draw up European standards giving specifications and testing conditions applicable to fire-resistant hydraulic fluids used for power transmission and control (hydrostatic and hydrokinetic). The standards are to be drawn up on the basis of the technical parts of Document 4746/10/91 referred to above. The use of such fluids is not covered by this mandate.

III. BODIES TO BE ASSOCIATED

The standard shall be prepared in cooperation with the main associations of the industries concerned, European-level representatives of workers and users and European laboratories and test centres.

CEN shall also invite experts from the Safety and Health Commission for the Mining and Other Extractive Industries to participate in the work.

IV. EXECUTION OF THE MANDATE

4.1 CEN shall present a programme of standards, in accordance with clause 2 above, to the European Commission within six months of acceptance of this mandate.

The programme shall indicate the areas to be covered by the standards and any links with existing activities, and shall establish a timetable. CEN shall present the draft standards to the Commission by the target dates indicated.

4.2. The European standards (EN) shall be adopted by the target dates specified. At these dates, versions in German, English and French shall be available.

4.3 The European standards adopted shall be transposed as national standards and any diverging national standards shall be withdrawn from the catalogues of the national standards organizations in the Member States within six months of adoption of the new standards.

4.4 CEN shall keep the European Commission informed of the progress of work on this mandate and of any difficulties arising. Should a revision of the standards or the programme be necessary as a result of developments in the state of knowledge and technology, the CEN shall inform the European Commission, which will forward this information to the Member States.

Revision of the standards adopted on the basis of this mandate in conformity with the CEN/CENELEC Internal Regulations shall be covered by this mandate.

4.5 Acceptance by CEN of this mandate starts the standstill period referred to in Article 7 of Council Directive 83/189/EEC (OJ L109 of 28.03.1989) as last amended by Directive 94/10 of the Council and Parliament (OJ L100 of 19.04.1994).