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Report

drawn up on behalf of the Committee on the Environment, Public Health and Consumer Protection

on the proposal from the Commission of the European Communities to the Council (COM(83)368/fin. Doc. 1-617/83) for a directive relating to the protection of dialysis patients by minimising the exposure to aluminium

Rapporteur: Mr D. CERAVOLO

PE 89.192/fin.

English Edition

By letter of 15 July 1983, the President of the Council of the European Communities requested the European Parliament to deliver an opinion, pursuant to Articles 100 and 235 of the EEC Treaty, on the proposal for a Council Directive relating to the protection of dialysis patients by minimising the exposure to aluminium.

On 12 September 1983, the President of the European Parliament referred this proposal to the Committee on the Environment, Public Health and Consumer Protection.

On 22 September 1983, the Committee on the Environment, Public Health and Consumer Protection appointed Mr Ceravolo rapporteur.

It considered this proposal at its meeting of 18 April 1984. At the same meeting the committee unanimously adopted the proposal together with the subsequent amendments and the motion for a resolution.

The following took part in the vote: Mr Collins, chairman; Mr Ryan, vice-chairman; Mr Ceravolo, rapporteur; Mr Alber, Mr Bernard (deputizing for Mr Bombard), Mr Calvez (deputizing for Mr Nordmann), Mr Del Duca, Mrs Dury (deputizing for Mrs Van Hemeldonck), Mr Enright (deputizing for Mrs Weber), Mr Forth, Mr Johnson, Mrs Lentz-Cornette, Mrs Lizin (deputizing for Mrs Krouwel-Vlam), Mrs Pruvot (deputizing for Mrs Scrivener), Mr Sälzer (deputizing for Mr Ghergo), Mrs Schleicher, Dr Sherlock, Mr Schmid (deputizing for Mr Muntingh), Mrs Spaak, Mrs Squarcialupi and Mrs Veronesi (deputizing for Mrs Le Roux).

The report was tabled on 25 April 1984.

Contents

The Committee on the Environment, Public Health and Consumer Protection hereby submits to the European Parliament the following amendments to the Commission's proposal and motion for a resolution together with explanatory statement:

Proposal for a Council Directive relating to the protection of dialysis patients by minimising the exposure to aluminium

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities
AMENDMENT No. 1	
Second recital: Whereas, in view of the growth in the number of patients undergoing substitutive dialytic therapy in the Community ... (remainder unchanged)	Second recital: Whereas, in view of the growth in the number of renal dialysis patients in the Community ...
AMENDMENT No. 2	
Fourth recital: Whereas clinical observations and epidemiological studies have shown that aluminium accumulates in the body of patients undergoing dialysis or haemofiltration;	Fourth recital: Whereas clinical observations and epidemiological studies have shown that aluminium accumulates in the body of dialysis patients;
AMENDMENT No. 3	
Fifth recital: Whereas clinical observations have shown that with elevated body burdens of aluminium, severe health effects and in particular acute or chronic forms of encephalopathy and osteomalacia develop in time (initially in months, etc.);	Fifth recital: Whereas clinical observations have shown that with elevated body burdens of aluminium, severe health effects and in particular encephalopathy develops in 2 to 3 years;

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities
AMENDMENT No. 4	
Sixth recital: ... and the reference levels help to improve the management of the dialysis patients;	Sixth recital: ... and the reference levels help in the management of the dialysis patients;
AMENDMENT No. 5	
Seventh recital: Whereas it is appropriate to consider a comprehensive approach and cover all types of substitutive treatment for uraemia and all sources of aluminium;	Seventh recital: Whereas it is appropriate to consider a comprehensive approach and cover all types of renal dialysis methods and all sources of aluminium;
AMENDMENT No. 6	
Eighth recital: Whereas the aluminium accumulating in the body of dialysis patients may arise from the dialysis and haemofiltration fluids, including the water ... (remainder unchanged)	Eighth recital: Whereas the aluminium accumulating in the body of dialysis patients may arise from the dialysis fluids, including the water ...
AMENDMENT No. 7	
Eleventh recital: ... the water intended for hemodialysis there is the probability of serious consequences for a significant number of patients;	Eleventh recital: ... the water intended for renal hemodialysis there is the probability of encephalopathy developing in a significant number of patients;
AMENDMENT No. 8	
Not applicable to the English text.	

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities

AMENDMENT No. 9

Not applicable to the English text.

AMENDMENT No. 10

Not applicable to the English text.

AMENDMENT No. 11

Article 1: This Directive concerns the protection of patients suffering from renal insufficiency and undergoing substitutive treatment from the toxic effects ... (remainder unchanged)	Article 1: This Directive concerns the protection of renal dialysis patients from the toxic effects ...

AMENDMENT No. 12

Article 2(1) In order to protect renal dialysis patients against the toxic effects of aluminium, Member States shall inform all persons in charge of their management that the aluminium in their plasma or serum must be regularly monitored; they shall provide recommended reference levels for aluminium in serum or plasma.	Article 2(1) Member States shall inform all persons in charge of the management of renal dialysis patients that the regular monitoring of aluminium in the plasma or serum of these patients is desirable for attempting to protect them against the toxic effects of aluminium, and shall provide recommended reference levels for aluminium in serum or plasma.

AMENDMENT No. 13

Article 3(1) From 1 January 1986 Member States shall ensure that the aluminium level in the dialysis fluids does not exceed 30 µg/l; it is recommended, however, that this aluminium level be restricted to a maximum of 10 µg/l as soon as possible; if the technical requirements are met, this figure should be made binding as from 1 January 1988.	Article 3(1) From 1 January 1986 Member States shall ensure that the aluminium level in the dialysis fluids does not exceed 30 µg/l; it is recommended however that these levels do not exceed 10 µg/l.

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities
AMENDMENT No. 14	
Article 3(4) When the results of analysis show as from 1 January 1986 that the level of 30 µg/l is exceeded and as from 1 January 1988 that the level of 10 µg/l is exceeded, Member States must ensure that steps are taken to reduce the aluminium in the dialysis fluids to the prescribed level.	Article 3(4) When the results of analysis show that the level of 30 µg/l is exceeded, Member States shall ensure that appropriate remedial action is taken.
AMENDMENT No. 15	
Article 3(6) The level of 30 µg/l and 10 µg/l from 1 January 1988 shall be regularly reviewed by the Commission.	Article 3(6) The level of 30 µg/l shall be regularly reviewed by the Commission, and proposals made in order to achieve the recommended level of 10 µg/l as soon as possible.
AMENDMENT No. 16	
Article 4(3), first paragraph ... if the aluminium level exceeds 30 µg/l as from 1 January 1986 and 10 µg/l as from 1 January 1988.	Article 4(3), first paragraph ... if the aluminium level exceeds 30 µg/l.
AMENDMENT No. 17	
Article 4(3), second paragraph Even if the levels of aluminium in the diluting water are below the above levels treatment of the water may be desirable ... (remainder unchanged)	Article 4(3), second paragraph Even if the levels of aluminium in the diluting water are below 30 µg/l treatment of the water may be desirable.

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities
AMENDMENT No. 18	
Article 5(1) Member States shall ensure that the authorities responsible for water distribution are informed of all the dialysis units using the water distributed by these authorities.	Article 5(1) Member States shall ensure that the authorities responsible for water distribution are informed of all the renal dialysis units and haemodialysis patients using the water distributed by these authorities.
AMENDMENT No. 19	
Article 5(2) The authorities responsible for water distribution shall inform, if possible in advance, all renal dialysis units of any important changes in the water treatment procedures which may increase the aluminium concentration in the water and shall urge the renal dialysis units to inform the patients in their care accordingly.	The authorities responsible for water distribution shall inform, if possible in advance, all renal dialysis units of any important change in the water treatment procedures which may increase the aluminium concentration in the water.
AMENDMENT No. 20	
Article 6(1), third indent - Haemofiltration solutions shall mean all solutions used in the European Community for the purpose of haemofiltration and haemodiafiltration.	Article 6(1), third indent - Haemofiltration solutions shall mean all solutions used in the European Community for the purpose of replacement fluids in haemofiltration.
AMENDMENT No. 21	
Article 6(2), second indent - the aluminium concentration in the dialysis fluid supplied for peritoneal dialysis solutions does not exceed 15 µg/l as from 1 January 1986 and 10 µg/l as from 1 January 1988;	Article 6(2), second indent - the aluminium concentration in the dialysis fluid supplied for peritoneal dialysis solutions does not exceed 15 µg/l. Attempts should be made to further reduce the aluminium concentration to as low a level as possible.

Amendments tabled by the Committee on the Environment, Public Health and Consumer Protection	Text proposed by the Commission of the European Communities
AMENDMENT No. 22	
Article 6(2), third indent - the aluminium concentration in the haemofiltration and peritoneal dialysis solutions and concentrated saline solutions for haemodialysis does not exceed 10 µg/l.	Article 6(2), third indent - the aluminium concentration in the haemofiltration solutions does not exceed 10 µg/l.
AMENDMENT No. 23	
Article 6(2), fourth indent (new) - specifications are drawn up for manufacturers and the aluminium concentration in each batch is monitored. Annex 2 lays down the analytical methods to be used.	
AMENDMENT No. 24	
Article 6(2), fifth indent (new) - all dialysis fluids put on the market shall bear a label showing the maximum amount of aluminium they contribute, including after dilution in the case of dialysis concentrates. The results of analysis and a sample of each batch shall be kept available for the competent authority.	
AMENDMENT No. 25	
Annex 3: With the exception of water softening techniques, both demineralization techniques and reserved osmosis may be used for this treatment. The choice will depend on the local circumstances.	Annex 3: In general at present both demineralization techniques and reversed osmosis may be used for this treatment. The choice will depend on the local circumstances.

A

MOTION FOR A RESOLUTION

closing the procedure for consultation of the European Parliament on the proposal for a Council Directive relating to the protection of dialysis patients by minimising the exposure to aluminium

The European Parliament,

- having regard to the proposal from the Commission to the Council (COM(83) 368 final),[1]

- having been consulted by the Council pursuant to Articles 100 and 235 of the Treaty (Doc. 1-617/83),

- having regard to the report of the Committee on the Environment, Public Health and Consumer Protection (Doc. 1-195/84),

- having regard to the result of the vote on the Commission's proposal,

A. whereas recent clinical and epidemiological studies have established that a very serious neurological syndrome affects uremic patients on dialysis,

B. whereas it has been demonstrated that the cause lies in the high level of aluminium concentration in the grey matter of the brains of dialysis patients,

C. whereas, where encephalopathy has assumed epidemic proportions, very high concentrations of aluminium have been found in the water supplies and thus in the dialysis fluids,

D. whereas Directive 80/778/EEC[2] relating to the quality of water intended for human consumption does not include aluminium in the list of toxic substances and lays down maximum admissible concentrations that no longer correspond to the requirements set by recent clinical and epidemiological studies,

E. whereas some 60,000 patients undergo dialysis treatment each year and the number is increasing by 10% a year,

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[1] OJ No. C 202 of 29.7.1983

[2] OJ No. L 229 of 30.8.1980

1. Welcomes the fact that, following appropriate studies, the Commission has submitted a proposal for a directive that deals in an articulate and comprehensive manner with renal dialysis methods and all the sources of aluminium concentration with a view to harmonizing measures throughout the Community in order to guarantee the quality of the water also from the point of view;

2. Approves in general the Commission's proposal for a Directive;

3. Points to the need to restructure the directive in order to include trade aspects connected with control of dialysis products at both the production and distribution stages;

4. Calls on the Commission also to lay down the date by which the aluminium level in dialysis fluids must be reduced to 10 µg/l and to intensify technical research to determine the analysis methods needed for this purpose;

5. Hopes that the Council of Ministers will speedily approve the directive since, now that it is known that the health of tens of thousands of citizens is seriously endangered each year, delays of any kind would be unacceptable;

6. Instructs its President to forward to the Council and Commission, as Parliament's opinion, the Commission's proposal as voted by Parliament and the corresponding resolution.

B

EXPLANATORY STATEMENT

1. Renal dialysis centres that perform haemodialysis are being established throughout the Community. At present there are over 1,000 centres which treat between 50,000 and 60,000 patients each year, and for various reasons the number is increasing by about 10% a year. The annual cost of treating a patient suffering from renal insufficiency is some 30,000 ECU.

2. The cost of increased protection against aluminium is minimal compared with the additional hospital cost per patient suffering from encephalopathy and osteomalacia. According to reliable estimates, the cost will be around 0.7% whereas the hospital costs involved as a result of complications would be around 150%. Home dialysis, which allows some reduction in the cost of treatment, is available to only 25% of patients. Other new techniques such as peritoneal dialysis and haemofiltration also reduce the costs and allow the patients greater mobility.

3. With the development of haemodialysis, the occurrence of some complications, mainly encephalopathy and osteomalacia has become evident. Osteomalacia develops when bones lose some of their calcium with consequent pain and fractures. Dialysis-induced osteomalacia is resistant to vitamin D treatment.

4. In 1972 another complication, the progressive fatal neurological syndrome was recognized in uraemic patients on haemodialysis. It was discovered that aluminium concentration in the grey matter of the brains of the patients affected was significantly higher than for other uraemic patients.

5. The main sources of aluminium are the dialysis fluid (the dialysis concentrate plus the water used to dilute it) and absorption through the gastro-intestinal tract of aluminium hydroxide medication. The quantity is related to the increased body burden.

6. It is estimated that the normal concentration of aluminium in the blood is around 10 µg/l. Currently it is difficult to keep the aluminium concentration of dialysis patients below 50 µg/l and at times it is even as high as 100 or 200 µg/l. Between 50% and 70% of the aluminium from the dialysis solution or absorbed through the gastro-intestinal tract is to be found in the blood plasma, the remainder being associated with erythrocytes.

7. When epidemic forms of encephalopathy occurred in dialysis centres, controls revealed very high concentration of aluminium in the water supplies and thus in the dialysis fluid. In fact, concentrations of up to 1,000 µg/l may occur in some very soft, acidic, upland water, but in most natural water the concentration is less than 30 µg/l.

8. Aluminium in drinking water may be left over from disinfection processes. In dialysis centres where epidemics of encephalopathy have occurred it was found that the situation could be considerably alleviated by removing aluminium from the dialysis solution.

9. The water used to prepare dialysis fluids may be an important source of aluminium in the blood of patients. A study has shown that reverse osmosis is being increasingly used as a means of treating the water needed for hospital haemodialysis.

10. For home dialysis the most popular technique is still water softening but this should be prohibited because it does not remove sufficient aluminium. Dangerously high concentrations of aluminium may occur in the serum of patients treated by continuous ambulatory peritonial dialysis (CAPD). Aluminium compounds are also administered to dialysis patients to control the serum phosphate concentration and are associated with a corresponding increase of aluminium in the tissues and serum. Experiments have been made with other preparations (calcium carbonate and magnesium hydroxide) that are phosphate-binding agents but they are not as effective as the aluminium agents.

11. Phosphate intake can be controlled adequately by restricting foods high in phosphate content. During haemodialysis aluminium can be prevented from passing through the dialysis membrane only if its concentration in the

dialysis solution is extremely low, about 10 µg/l. The pH, which determines the solubility of the aluminium, affects the transfer.

12. There are three methods of eliminating aluminium from water: softening, demineralization and reverse osmosis. Reverse osmosis would appear to be the most effective method provided it is properly carried out, eliminating between 85 and 95% of the aluminium present in water. It also eliminates 99% of pollutants. It is also advantageous from a cost point of view. The cost of installing equipment for reverse osmosis are higher than for demineralization equipment but is offset by lower maintenance and running costs.

13. At present producers of dialysis fluids are trying to control the concentration of aluminium but are finding it difficult to do so because of the lack of reference methods and materials and equipment. Aluminium levels in haemodialysis concentrates are around 300-600 µg/l before dilution and 10-30 µg/l with peaks of 50 µg/l in CAPD fluids, mainly because of the salts used in the preparation of the fluid.

14. The lack of regulations and indications makes it difficult to require suppliers to meet particular specifications. The vessels, filters and tubing used during manufacturing and storage of the concentrates may cause aluminium contamination. Even plastic bags may cause problems. Reference methods for the various types of fluids will have to be developed on the basis of inter-laboratory surveys. It is only on the basis of such surveys that acceptable routine methods can be developed.

15. The national experts consulted by the Commission feel that there is no need for primary legislation in this area. In 1982 the French Pharmacopoeia established a limit of 30 µg/l for aluminium in water used for dialysis. In 1983 the United Kingdom adopted a recommendation limiting the aluminium content in CAPD fluids to 10 µmol/l. In some Member States, any changes in the quality of the water have to be notified by the water supply authorities.