

Letter of 15 December 2000 to the European Commission, Att. Ludwig Krämer (DG ENV) and Reinhard Schulte-Braucks (DG ENTR) from the Danish Ministry of Environment and Energy. Ref no. (to be quoted in correspondence) M 711/17-0104

**Subject: Comments of the Danish Government on the Green Paper on Environmental Issues of PVC**

With reference to the Commission's letter of 9 August 2000, The Danish Government hereby submits its comments.

The Danish Government regards the publication of the Green Paper on Environmental Issues of PVC as an important and positive step towards developing a common EU strategy to solve the problems associated with using and disposing of PVC.

The Danish Government considers that the Green Paper deals with many problems which Denmark has been attempting to solve since the end of the 1980s. The first step was an agreement concluded between industry and the retail trade in 1991 with a view to substitution and recycling in the fields of construction materials, packaging and other products. The enclosed "*Strategi for PVC-området, statusredøgørelse og fremtidige initiativer*" contains a summary of experiences with the Danish PVC agreement.

The Danish Government can offer the benefit of Danish experiences and studies to ensure that the EU strategy is a viable solution to the problems associated with PVC.

In general:

In some areas, the Green Paper does not give a satisfactory description of the problem.

The use of tin organic compounds in PVC is only mentioned briefly in the Green Paper. New studies on PVC products on the Danish market have shown that dibutyl tin compounds are also used to stabilise PVC. Small amounts of tributyl tin have also been found; presumably as impurities in the dibutyl tin stabiliser. Tests have also shown that tin compounds can migrate from the plastic material when PVC products are used. Both dialkyl and trialkyl tin compounds damage the immune system. The substances are persistent and bioaccumulative.

More studies should be carried out into the use of dialkyl tin compounds in PVC to limit the use of substances which are harmful to the environment and health. The possibility of using less harmful alternatives should be investigated. Both the deliberate and unintentional use of tributyl tin compounds in PVC and other products should be limited by imposing a sales ban as soon as possible.

One area of use which has previously been overlooked is plastic-coated cladding sheets, i.e. steel sheets coated with plasticised PVC for exterior use. The sheets are used to clad the facades primarily of halls, cowsheds and similar buildings. In Denmark, an estimated 4 500 tonnes of PVC is used per year for such products (corresponding to 650 000 m<sup>2</sup>). The PVC surface coating causes environmental problems when the steel is recycled. During the recycling process, the steel is subject to thermal treatment at a temperature range which favours the formation of dioxins.

Moreover, the extent to which certain types of PVC products containing environmentally-harmful substances should be classified as hazardous waste is still unclear. Denmark has raised this matter with the EU Commission. Under current EU legislation, hazardous waste must be dealt with separately. A classification of certain types of PVC as hazardous waste would mean, *inter alia*, that it would have to be disposed of in separate cells. The Danish Government urges the Commission to clarify the question of the classification of PVC waste as hazardous without delay.

The Danish Government's replies to the Commission's questions are as follows:

Question 1:

*What measures should be implemented to address the issue of the use of lead and cadmium in new PVC? According to what timeframe?*

Cadmium and lead should be limited as far as possible. Their use should therefore also be limited in areas where there are technical and financial alternatives which are less harmful to health and the environment.

In Denmark, any use of cadmium for PVC has been banned. It is technically and financially possible to produce window frames using calcium/zinc stabilisers. Since January 1999, all window frames manufactured in Denmark have been cadmium and lead free. Even if the European industry were to stop using cadmium, imports from other countries are still permitted into the EU. A ban should therefore be imposed as soon as possible with a view to stopping the sale of cadmium stabilisers and all PVC products, toys and medical equipment containing cadmium.

Lead causes problems in connection with recycling residues from waste treatment. Disposing of products containing lead in landfills increases the risk of lead spreading in the environment in the long term. The greatest risk when landfilling PVC products which contain lead is the use of lead in plasticised PVC, as there is a risk of migration with the plasticisers. In Denmark, the industry concluded a voluntary agreement in 1991 to use lead substitutes wherever technically and financially possible. This has already proved possible for many products other than construction materials. There are suitable alternatives for windows and doors in the form of calcium/zinc stabilisers. As yet there are no alternatives for pipes, but new alternatives are being developed and are expected to become available before the end of 2003.

The Danish Government has notified and implemented an Order banning the sale of lead and products containing lead. The Government urges the Commission to take the initiative for a common policy to limit the spread of lead in the environment. A ban on the sale of PVC products containing lead in areas where alternatives already exist should therefore be imposed as soon as possible. The Directive should specify when the use of lead should cease in areas where alternatives have already been developed. The Directive should also be amended when suitable alternatives become available in other areas as a result of technical developments.

Question 2:

*Should specific measures be taken for the use of phthalates as plasticisers in PVC? If so, when and through which instruments?*

The loss of phthalates into the environment is a serious problem. Field studies have shown that the rate of decomposition in the environment differs from that in laboratory experiments. Phthalates bind to sediments, and some phthalates have an effect on organisms in water and sediments. Dibutylphthalate, Butyl Benzyl Phthalate, Di(2-ethylhexyl) phthalate and Di-"isononyl" phthalate are given high priority in OSPAR's strategy for limiting environmentally harmful substances in the marine environment. Even if current data shows that there is no direct risk to the environment from certain phthalates, the substances can cause a problem in the long term due to their slow rate of decomposition, spreading and accumulation in sediment.

Di(2-ethylhexyl) phthalate is found in considerable quantities in sewage sludge, which means that up to 1/5 of the sludge cannot be used on agricultural land in Denmark.

The undercarriage treatment of new cars with PVC is a major source of the spread of PVC in water and waste water. Another major source is washing textiles printed with PVC. The Danish Government would therefore like these sources to be limited as soon as possible through EU legislation.

The Danish strategy aims to reduce the use of phthalates by 50% over 10 years, in such a way that the major sources are hit most strongly.

All uses which pose a direct threat to the environment and health should be limited as soon as possible. Risk assessments should therefore be carried out, and risk reduction strategies developed in the EU as a priority.

### Question 3:

#### *What would be the most effective means of increasing PVC recycling?*

In the Green Paper, the Commission indicates that there is very little PVC recycling in Europe, and that greater efforts should be made to increase recycling. The Green Paper also states that the degree of contamination and the composition of the collected material are decisive for the quality of new PVC products.

In the Danish Government's opinion, the PVC products entering the waste cycle in future which are suitable for mechanical recycling will primarily be construction materials of unplasticised PVC. Such products are very likely to contain lead and cadmium. The Danish Government considers that as a starting point, PVC products containing cadmium and lead should not be recycled to produce new products. The mechanical recycling of PVC products is therefore likely to be very limited in years to come.

The Danish Government takes the view that greater efforts should be made to develop new methods of treatment for chemical recycling. These methods must ensure that the resources in PVC waste are exploited, and that the problems of environmentally harmful substances are eliminated (see also the response to question 5). The Danish Government therefore considers that chemical recycling should be promoted over mechanical recycling. Mechanical recycling can only really be useful when new PVC products free of environmentally-harmful heavy metals come into the waste stream. Special installation waste from new lead-free pipes can be mechanically recycled.

In Denmark, around 700 tonnes of PVC construction waste is collected each year from installations and broken products for mechanical recycling. Most of this waste contains

lead. Products containing cadmium – for example roofing sheets – are separated out for disposal. The amounts collected for mechanical recycling mainly comprise pipes (75%) and to a lesser extent guttering (6%) and stall partitions from piggeries (2%). The amounts collected correspond to around 2% of the total estimated amount of PVC waste.

A prerequisite for handling waste separately, including recycling PVC waste, is an effective method of sorting. It will be necessary to stipulate – if necessary at national level – the establishment of a special collection scheme for PVC waste for recycling. A scheme involving sorting at source has the advantage that the waste collected will mainly comprise material suitable for recycling.

At present, the amount of PVC waste can only be estimated. The Danish Government considers it important that work is carried out in the long term to gain an overview of the potential amounts of PVC waste for treatment. Once this has been done, concrete targets should be set for the amount of waste to be collected and recycled.

#### Question 4:

*Should specific measures be attached to the mechanical recycling of PVC waste containing lead and cadmium? If so, which ones?*

The Danish Government takes the view that PVC products containing the heavy metals cadmium and lead should not be reused to produce new PVC products. The use of these two metals should cease as soon as possible.

There is currently an EU ban in force on the use of cadmium in a long series of products. Some Member States, however, still permit the recycling of PVC waste containing cadmium. Unless an overall ban is imposed, it may take years before the use of this harmful substance ends.

Should no overall EU ban be imposed on the use of regenerated PVC waste containing lead, the Danish Government considers it vital that requirements are introduced to control the recycling of such waste. The use of regenerated PVC waste containing lead should only be permitted for certain products, and the addition of virgin PVC should be as low as possible.

#### Question 5:

*What measures would be most appropriate for chemical recycling of PVC waste?*

The Danish Government considers that greater efforts should be made to develop new methods of treatment. The development work should take account of the fact that PVC waste can be converted into new products or chemical compounds which are non-toxic to the environment and health, and which can be recycled. The aim should be to carry out lifecycle analyses of the new treatment technologies before they are put to use.

In the Green Paper, the Commission emphasises that chemical recycling is not financially attractive. In connection with the choice of new treatment technologies, efforts should be made to compare the financial and environmental consequences as well as the use of energy and resources.

#### Question 6:

*What measures would be most effective to address the issues linked to the incineration of PVC waste?*

Incinerating PVC waste gives rise to environmental problems, for which reason the Danish Government considers that PVC waste should be disposed of in other ways, as far as possible.

Although waste which is unhygienic or poses a risk of infection should still be burned, such as hospital waste, a considerable amount of PVC waste is actually household waste (it comprises almost 1% of household waste), and many different discarded household products contain PVC.

Most domestic waste in Denmark is incinerated in accordance with the EU waste disposal strategy. The content of PVC creates problems in connection with incineration.

In Denmark, requirements have recently been introduced that municipalities handle PVC waste separately from April 2001. The municipalities are therefore obliged to ensure that PVC waste considered suitable for recycling is sorted specifically for that purpose. PVC waste which cannot be recycled must be disposed of in landfills.

In spite of the requirement that PVC waste be sorted, the Danish Government considers that around 53-60% PVC waste will still be delivered to Danish incineration plants. Certain PVC products, for example PVC construction materials, will be relatively easy to sort, whereas products such as toys, textiles, credit and debit cards, office equipment, etc. will be difficult. Moreover, products considered to pose a hygiene or infection risk, such as PVC hospital waste – will still have to be burned.

The Danish Government is of the opinion that many of the solutions indicated by the Commission in the Green Paper have not been analysed in sufficient detail to be implemented in the foreseeable future. The Government feels that the priority is to ensure that incineration plants are not used to dispose of PVC waste, not because of the expected rise in the amounts of such waste.

The Danish Government urges the Commission to act decisively to ensure that incineration plants are not used to dispose of PVC waste, and not to wait for the development of a financially advantageous model whereby additional costs of incineration are passed on to the PVC producers, or for the development of new flue gas cleaning technologies.

Efforts to ensure that incineration plants are not used to dispose of PVC waste will not be sufficient in themselves, as it will not be possible to keep all PVC waste out of the incineration plants. The Danish Government would therefore like to see the requirement that PVC products be sorted either for recycling or disposal supplemented by a targeted effort to substitute alternatives for products which are difficult to sort.

The Danish Government has found that one of the greatest problems associated with handling PVC waste is related to products which are difficult to separate out of the waste stream and therefore difficult to deal with in an environmentally responsible manner. The use of these products should be ended as soon as possible, either by substituting alternatives or through a sales ban. An effective means of achieving this is to use taxes. In 1999, the Danish Government imposed a differentiated PVC tax. The use of financial instruments can be supplemented with targeted consumer information campaigns.

Question 7:

*Are specific measures concerning the landfilling of PVC waste necessary? If so, which ones?*

The Danish Government considers that it can be environmentally acceptable in the short term to dispose of PVC waste which cannot be recycled by landfilling. This should be done only in landfill sites which can meet the emission standards laid down in the Directive on the landfilling of waste.

The Danish Government recommends that PVC waste be disposed of in separate landfills, as no assessments have yet been made of the risk of phthalate contamination.

The Danish Government also considers that landfilling PVC waste will not be sustainable in the long term. The majority of waste expected to be landfilled in Denmark will be plasticised PVC. The Government considers it vital that efforts to develop new treatment technologies in the EU are increased.

Question 8:

*What are the appropriate instruments for developing a horizontal strategy on PVC? Should a PVC substitution policy for some specific applications be envisaged? If so, how?*

A horizontal PVC strategy could be based on a Directive on the use and disposal of PVC.

The Directive should include rules on handling PVC waste, so that PVC suitable for recycling – i.e. unplasticised PVC construction materials free of environmentally harmful additives – is separated out for mechanical recycling, and other PVC collected with a view to chemical recycling, when the methods have been sufficiently tested. Until suitable methods of treatment have been developed, PVC waste which cannot be recycled should be disposed of in landfills.

The Directive should also phase out additives which are harmful to the environment and health, so that PVC will not cause as many problems in future as we are experiencing today.

The Directive should also include rules to ensure that alternatives are substituted as soon as possible for products which are difficult to identify and separate out of the waste stream. Examples of products which are difficult to sort are packaging, items of clothing, toys, furniture, plastic-coated steel surfaces and undercarriage coatings for new cars. Lifecycle analyses of PVC products and their alternatives should be included in an evaluation of the individual products as part of a product-orientated environmental strategy.

The best way of promoting substitution is through sales bans and taxes on PVC.

As mentioned above, the Danish Government takes the view that plastic-coated steel surfaces are an area of use which has been overlooked. In Denmark, 4 500 tonnes of PVC are used in this type of product. The use of PVC as a surface coating gives rise to environmental problems when the steel is recycled. During this process, the steel is subjected to thermal treatment at a temperature range which favours the formation of dioxins. The Danish Government considers this environmental problem so serious that a

targeted effort to find an environmentally friendly alternative to such PVC products should be made as soon as possible.