

Message from Mr. Godart :

European Commission  
Att : Dr L. Krämer, DG Environment  
200 rue de la Loi  
B-1049 Brussels  
BELGIUM

Levallois le vendredi 20 octobre 2000

PVC le Livre Vert

Monsieur Krämer,

Je suis employé de la société ATOFINA située à Levallois-Perret (France) et active dans l'industrie chimique et me sens concerné par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

Le PVC est un des matériaux synthétiques les plus modernes :

- Il offre une valeur ajoutée importante à la société, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, des châssis de fenêtres sans entretien, de bonne performance énergétique, des tubes de distribution d'eau assurant leur fonction pendant 100 ans etc...
- Notre société fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications
- Je sais que d'autres matériaux plastiques, ou naturels peuvent être utilisés dans certaines applications mais ceux-ci sont souvent moins efficaces en terme économique et/ou écologique que le PVC.
- Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.
- Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.
- De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.

- L'importance de l'industrie du PVC, y compris les petites et moyennes industries transformatrices, est considérable en Europe.

Message from Godart

C'est pourquoi je soutiens l'engagement Volontaire de l'industrie de PVC qui nous a été présenté dans nos usines.

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC.

Je souhaite que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Je vous prie Monsieur, de bien vouloir agréer l'expression de ma considération distinguée.

## Message from Greenpeace:

### PVC - no time to waste! (October 2000)

#### **PVC - the poison plastic**

The manifold hazards of PVC (polyvinyl chloride) throughout each step of its lifecycle always go back to the same two causes that are *specific* for PVC: it is made out of chlorine, and it requires large amounts of additives to be functional.

The chlorine trap: Pure PVC consists of 57% of chlorine. All chlorinated precursors of PVC (chlorine, ethylene-dichloride, vinyl-chloride monomer) are highly toxic, and their production generates toxic wastes and emissions. The combustion of PVC - be it in accidental fires, waste incineration or metal recycling - leads to the formation of hydrochloric acid and dioxins, the latter being the most poisonous synthetic chemical known to man. When burnt in an incinerator, the chlorine content of PVC is transformed into hydrochloric acid, which needs to be neutralised by the addition of lime. This leads to the absurd effect that the incineration of 1 ton of PVC can lead to the formation of *more* than 1 ton of secondary residues - residues that are classified as hazardous waste. Finally, chlorine makes PVC recycling incompatible with the recycling of other plastics. While most of PVC's infamous high-volume organochlorine relatives, such as CFCs, PCBs, and DDT have been banned, the production of PVC continues to increase.

The additive trap: Pure PVC is useless. Hard PVC requires the addition of stabilisers; soft PVC requires the addition of softeners and stabilisers. Commonly used stabilisers are toxic lead, cadmium and organotin compounds; commonly used softeners are toxic phthalates. These additives leach out of PVC during use and disposal. The toxic phthalates used to soften PVC have become the most abundant man-made chemicals in the environment. The presence of a multitude of different additives creates incompatibilities during recycling - different PVC waste streams need to be separated from each other prior to recycling, or will otherwise lead to low-quality downcycling. The recycling of PVC containing toxic additives results in an uncontrolled spreading of these additives into new products.

In summary, the PVC building block chlorine and PVC's need for high amounts of additives not only create major hazards during production and use, but also leave no viable waste treatment option. Even if all PVC additives were non-hazardous, the key ingredient chlorine disqualifies PVC as a sustainable material.

#### **PVC - key findings of the five EU studies**

The key hazards presented above have been documented and proven by the five studies on PVC waste management of the European Commission.

- **PVC wastes on the increase:** The amounts of PVC wastes are projected to increase more than 80% over the next 20 years, from 4.1 to 7.2 million tonnes/year. Almost 90% of these wastes are post-consumer wastes.
- **Incineration – making things worse:** Incineration of 1 kg of PVC in the EU creates on average 0.8-1.4 kg of *hazardous* wastes (in incinerators with non-wet flue gas treatment) and 0.4-0.9 kg of residues in liquid effluent (in incinerators with wet flue gas treatment). Hazardous waste from PVC incineration will also be more likely to contaminate the environment, as PVC increases the amount of leachates and leachable salts in this waste significantly. Incineration of PVC creates additional costs between 20-335 Euro/tonne. PVC is responsible for 38 to 66% of the chlorine content in municipal solid waste. The formation of dioxins due to PVC has been beyond the scope of the study. Diverting PVC from incineration always leads to environmental improvements. Nevertheless, PVC incineration is estimated to increase more than fivefold over the next 20 years in a business-as-usual scenario, from currently 0.5 million tonnes/year to 2.6-2.9 million tonnes/year.
- **Landfilling - the ticking time bomb:** Landfilling of PVC results in the release of hazardous softeners. Releases of hazardous stabilisers cannot be excluded. These releases will occur for a very long period of time - longer than the guarantee of the technical barrier of the landfill. PVC waste will furthermore contribute to the formation of dioxins and furans in landfill fires.
- **Recycling – not solving the problem, and problematic in itself:** Recycling was found not to be qualified to contribute significantly to the management of PVC waste in the next decades, reaching at most 18% of total waste in 2020. Assuming that the maximum potential of PVC recycling is achieved, incineration of PVC waste would still increase more than fourfold to 2.2-2.5 million tonnes in 2020. Current recycling rates are at less than 3%. Most current recycling (2%) is downcycling - the recycling of PVC into low quality recyclates that do not replace virgin PVC - and therefore has no environmental benefits. Almost all PVC wastes contain hazardous additives. Recycling these wastes leads to a spreading of these hazardous substances into new products. High-quality recycling of PVC wastes without spreading lead, cadmium or PCBs into the recyclates is estimated to reach a maximum of 5% by 2020. Chemical recycling was found to be not economically viable.

## **PVC - recent political initiatives**

While the Commission studied the problems of PVC in waste, several governments started to take national initiatives to tackle the problems of PVC.

Sweden (April 1999): Adoption of a new chemical strategy

The strategy includes deadlines for phase-outs of several PVC additives (lead, chlorinated paraffins, phthalates and other plasticisers, tin stabilisers) and a ban on phthalates in toys for children under three.

Denmark (June 1999): Adoption of a PVC strategy

The aim of the strategy is to limit incineration of PVC and includes an action plan for reducing and phasing out phthalates in soft plastics, a ban on lead stabilisers, substitution of PVC-products that are difficult to separate from the common waste stream and tight measures to avoid downcycling of PVC waste into products of inferior quality.

Germany (June 1999): Recommendations of the German Environment Protection Agency (EPA) on PVC

The German EPA studied PVC in the light of sustainable material policy. It recommended a number of areas, where action was needed, i.a. a gradual phase out of soft PVC, no landfilling of PVC, no spreading of hazardous substances via recycling, phase outs of cadmium and lead, and the use of chlorine-free materials in certain inflammable areas.

Recent restrictions at EU level are so far limited to an emergency ban on the use of six phthalates in PVC teething toys.

## **PVC - recent business initiatives**

While the trend in companies to phase out the use of PVC began in the early 90's with furniture retailer Ikea and toy manufacturer Lego, and was continued by big supermarket chains (Migros, Tengelmann) and water bottling companies Nestle (owner of i.a. Perrier and Vittel) and Evian, a number of multi-national companies in a variety of sectors have joined the PVC-free movement in recent years in addition to numerous national companies (: "PVC-Free Future: A Review of Restrictions and PVC-free Policies Worldwide" - full report available on [www.greenpeace.org/~toxics/](http://www.greenpeace.org/~toxics/))

- 1998: Nike, German Telekom, Sony, Chicco
- 1999: Baxter Healthcare, General Motors, Ford, Mattel,
- 2000: Sydney Olympics

## **What does Greenpeace demand?**

PVC has no future in a sustainable society, as it is unavoidably linked to the generation and release of a variety of hazardous substances. The multiple life cycle hazards of PVC are more than well known. Current amounts of PVC are causing major problems in incineration, landfill and recycling. And the worst is yet to come, as most of the PVC that has been produced in the past is only now starting to enter the waste stream due to its average life span of ca. 34 years.

As if this was not enough, industry continues to put more and more PVC on the market. Since the European Commission committed to study the problems of PVC in July 1997, more than 25 million tons of PVC products have been sold in Europe - 22,000 tons per day, 250 kg per second. There is no more time to waste, every second lost adds a sizeable proportion to the unsolved problem. Alternatives are widely available, often offered by the same companies.

While there is a growing trend in businesses worldwide to go PVC-free, EU regulators lag seriously behind. Strong EU action is needed immediately, firstly to stop the problem from growing bigger and bigger, and secondly, to ensure that the treatment of PVC wastes does not harm the environment nor human health.

Greenpeace advocates that the following measures be taken against PVC:

### ➤ short-term action:

- phase out of short-lived PVC uses such as packaging and toys,
- phase out of PVC medical devices, for which alternatives are available,
- phase out of the use of hazardous stabilisers and softeners,
- ban on incineration and landfilling of PVC wastes,
- ban on recycling of PVC containing hazardous additives, and
- producer responsibility for the separation of PVC from the general waste stream and temporary storage until a waste solution has been found and implemented by the producer

### ➤ mid-term action

- develop and implement programme on phase out of entire PVC production.

# **GREENPEACE**

Contact: Axel Singhofen, tel +32-2-2801987, fax +32-2-2308413

Message from Helmut Wittmann :

Im nachfolgenden möchte ich meine positive Einstellung zu PVC abgeben und zwar wie folgt:

Wir haben uns vor 14 Jahren ein circa 300 Jahre altes Bauernhaus gekauft und renoviert.

Die Fenster und Türen waren so desolat, dass alle ausgetauscht werden mussten.(Insgesamt 3 Aussentüren und 8 große Fenster).

Wir haben uns nach längeren Überlegungen für Kunststoff-Fenster und -türen entschieden und ich muss sagen, dass wir diesen Schritt in keinsten Weise bereut haben.

Pflegeleicht (meine Frau meint, es sollte alles so leicht zu reinigen sein) , kein Nachstreichen oder -beizen, kein Verformen, wäremedämmend, etc.... Als weiteren großen Pluspunkt muss ich anmerken, dass die Türen und Fenster nach 14 Jahren wie neu aussehen! Sie können sich vorstellen, dass es nicht leicht war, die passenden Fenster

für ein ca. 300 Jahre altes Haus zu finden. Es ist uns gelungen, die Fenster wurden vom Erzeuger dem Stil des Hauses wunderbar angepasst.

Wir können aus diesem Grund den Werkstoff PVC bestens empfehlen.

Mit freundlichen Grüßen,

Helmut Wittmann

SOLVAY VIENNA GMBH

Message from Herve Toret :

Je suis employé de la société **ATOFINA**, partie Chimie du groupe **TOTALFINAELF**, active dans l'industrie chimique ; ayant été exploitant sur le site de **BALAN** (site industriel de l'AIN, fabriquant du PVC et du PE) et travaillant maintenant dans le département Procédé Polymères au sein de l'actuelle Direction Technique d'**ATOFINA**, je me sens très concerné par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

⇒ Le PVC est un des matériaux synthétiques les plus modernes :

⇒ Il offre une valeur ajoutée importante à la société, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, des châssis de fenêtres sans entretien, de bonne performance énergétique, des tubes de distribution d'eau assurant leur fonction pendant 100 ans etc...

⇒ Notre société fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications.

⇒ Je sais que d'autres matériaux plastiques, ou naturels peuvent être utilisés dans certaines applications mais ceux-ci sont souvent moins efficaces en terme économique et/ou écologique que le PVC.

⇒ Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.

⇒ Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.

⇒ De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.

⇒ L'importance de l'industrie du PVC, y compris pour les petites et moyennes industries transformatrices, est considérable en Europe.

***C'est pourquoi je soutiens l'Engagement Volontaire de l'industrie de PVC qui nous a été présenté dans nos usines.***

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC.

Je souhaite que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Je vous prie de croire, Monsieur Krämer, en l'expression de mes sincères salutations.

H. TORET

# Green Paper: “Environmental Issues of PVC”

COM(2000)469, 26/7/2000

## Public Consultation Process

### *Comments of ICI Chlor-Chemicals*

#### 1. EXECUTIVE SUMMARY

1. ICI Chlor-Chemicals welcomes the Commission’s adoption of the PVC Horizontal Initiative, the publication of the ‘Green Paper’ and the transparency of the public consultation process.
2. There are two deficiencies in the Horizontal approach which need to be addressed:
  - the consideration of the vertical effects of any proposed programmes and measures within the context of the high degree of vertical integration of the PVC chain from the effects on chlor-alkali manufacture (35% of chlorine feeds into the PVC chain) to the downstream effects on compounders, formulators and fabricators.
  - further evolution of substitution policy so that it (a) is based on the actual risks of activities rather than merely on the intrinsic hazards of substances which will be reflected to widely varying degrees depending on the exposure profiles of these activities, and (b) considers on a factual and even-handed basis the risks presented by PVC and by PVC alternatives, ensuring that where substitution is proposed, adequate data is made available on alternatives to make the case for substitution.
3. The Green Paper reflects the generation of certain toxic substances during the manufacture of PVC (and its raw materials) but does not fully reflect the fact that these toxic substances are very strictly controlled, especially in the EU, under existing legislation and regulation and are not emitted to the environment in significant quantities. In this respect there is no real difference in kind between PVC and other materials.
4. We welcome the primary focus of the Green Paper being on the topics of additives and of waste management as - in contrast to the issues of emissions - these are the two areas where there are significant differences between PVC and some other materials and where there are genuine issues that need to be addressed.
5. We support a hybrid approach using both voluntary initiatives and binding regulations. In such a combination we note that voluntary initiatives will normally be quicker to implement, more flexible in operation, more cost-effective and best engage the key stakeholders who need to take action. Binding regulatory or legislative measures should be reserved for aspects where there has been a demonstrable failure of the voluntary approach, or where they are the only way to secure a ‘level playing field’. Binding measures should take account not only of the need to avoid distortion of the internal market, but also the need to preserve the competitiveness of the EU industry in a global market. As binding measures can be difficult to institute and difficult to change they should only be used in areas where the facts of the situation have been well-established; where research or change is ongoing it may be more appropriate to rely - at least initially - on voluntary commitments.
6. Question 1 - Use of Stabilisers
  - the voluntary commitment of the PVC industry on cadmium and lead should be implemented.
  - the legislative phase-out of the use of cadmium stabilisers would be appropriate if, but only if, there were evidence - say by end-2001 - that the voluntary approach of ESPA had failed.
  - the PVC industry should be encouraged to develop further voluntary commitments on lead.
  - the UN/ECE Protocol on Heavy Metals should be ratified by the Commission and the Member States and should be implemented.



## 7. Question 2 - Use of Plasticisers

- decisions on the need for specific measures on the use of phthalate plasticisers in PVC should await the outcome of the ongoing risk assessments, should be science-based and should respect the differences between individual phthalates. In some cases the substitution of one phthalate for another may represent an environmentally favourable solution and should not be inhibited by treatment of all of these diverse chemicals as one.
- the PVC and plasticiser industry should be encouraged to make voluntary commitments as appropriate in the light of the outcomes of the above risk assessments.
- the need for legislative measures should be determined in the light of the success or otherwise of the industry to make appropriate and sufficient voluntary commitments to risk reduction measures commensurate with any determination of risk from the above risk assessments.

## 8. Question 3 - Mechanical Recycling of PVC Wastes

- the situation is rapidly evolving, technologies are continually developing, and the details of the economics of recycling are as yet far from clear.
- it would be unwise to rush prematurely into legislative and regulatory measures as it is as yet not at all certain which measures, if any, would be most effective.
- instead, there should be whole-hearted support for the voluntary initiative of the industry to improve and financially support the collection and recycling of the most relevant PVC waste streams.
- it is too early to say whether the present voluntary approach will be sufficient; it should be kept under review to determine whether there is a need for further voluntary commitments, or for the existing commitments to be backed by carefully selected regulatory measures.

## 9. Question 4 - Mechanical Recycling of Wastes containing Heavy Metal Stabilisers

- the main thrust of voluntary efforts should be to work towards the discontinuation of the use of cadmium and lead stabilisers in order to minimise future arisings of wastes of this type.
- if these efforts develop successfully - as seems to be the case at least for cadmium - then specific measures may not be required.
- to the extent that this is not the case, preference should be given to closed-loop systems which do not involve transfer of the heavy metals from the relatively safe context of a tightly-bound polymer matrix to forms in which they are more environmentally available.

## 10. Question N° 5 - Chemical Recycling of PVC Wastes

- chemical recycling is a relatively new option for PVC waste management and full-scale operation will be required before it is possible to arrive at a proper assessment of technical adequacy, environmental benefits and operational economics.
- the PVC industry should be encouraged in its Voluntary Commitment to progress in this area and, specifically, to identify by 2002 the most appropriate technology variant for scale-up.
- it is otherwise too early to be able to identify specific regulatory or legislative measures.

## 11. Question N° 6 - Incineration of PVC Waste

- there does not seem to be a direct quantitative relationship between chlorine and content and dioxin formation, and we are not aware of any evidence, based on real-life operation of properly operated high-temperature incinerators, that suggests that there is any particular threshold above which such a relationship might exist.
- we support the view expressed in the UN/ECE Protocol on Persistent Organic Pollutants that:  
*“The primary measures regarding the incinerated wastes, involving the management of feed material by reducing halogenated substances and replacing them by non-halogenated alternatives, are not appropriate for municipal or hazardous waste incineration. It is more effective to modify the incineration process and install secondary measures for flue-gas cleaning. The management of feed material is a useful primary measure for waste reduction*

*and has the possible added benefit of recycling. This may result in indirect PCDD/F reduction by decreasing the waste amounts to be incinerated.”*

and encourage the ratification of this Protocol by the EU and its Member States.

- it is very doubtful whether further research is likely to change this conclusion for real-life installations and resources would be better devoted to the continuing optimisation of incineration technology *per se*.
- incineration technologies which allow HCl recovery are to be preferred to those which require its neutralisation, although it has to be recognised that the value of the recovered HCl will vary widely with geographical location and the extent to which incineration is integrated with chemical processes capable of making beneficial use of the HCl generated. The PVC industry has committed to the development of HCl recovery technologies.
- recovery of the energy value of PVC is to be preferred to the loss of this resource.
- diversion to land-fill will not normally be as clean as incineration in a well-operated modern high-temperature incinerator - and loses the energy recovery.
- the complexity of the issues mitigates against legislative solutions and suggests that available resources would be better used in the encouragement of the development of flue-gas cleaning technologies that reduce the amounts of solid residues generated and maximise HCl recycling.
- legislative and regulatory measures should be confined to controls on the emissions from incinerators - such as the Waste Incineration Directive, which includes quantitative emission limits for dioxins; voluntary measures would be more effective in encouraging the development of the most sustainable technologies.

#### 12. Question N° 7 - Land-Filling of PVC Wastes

- our preference would normally be for (a) waste minimisation measures, e.g. recycling, and (b) incineration where the fate of the PVC molecule (and of additive molecules) is clear and controlled.
- at present it would appear that existing legislative and regulatory measures suffice. Ratification of the existing UN/ECE Directives of POPs and Heavy Metals would also be beneficial.

#### 13. Question N° 8 - Substitution Policy (see also §2 above)

- no regulation of any single material is appropriate without a full and factual analysis not only of any hazards and risks presented by that material, but also those presented by any suggested substitutes.
- for a material with as enormously wide a spectrum of uses as PVC it is extremely unlikely that there will be single substitutes covering more than a small fraction of applications.
- to the extent that substitution is considered, it might be better to focus on making sure that - for example by substitution of inappropriate additives - PVC is rendered and seen to be a fully sustainable product in each of its applications - environmentally, economically and socially.
- the PVC industry's Voluntary Commitment provides an excellent vehicle for developing the PVC industry towards this sort of sustainable future and deserves the full encouragement of the Commission - both as to the implementation of the existing commitments and as to a continuing dialogue to seek out further improvements.

## **2. INTRODUCTION**

ICI Chlor-Chemicals is the largest producer of chlor-alkali products in the United Kingdom and one of the largest in the European Union. With plants located in the United Kingdom and Germany, we employ [7,000] people and generate an annual turnover of some [€ million]. We make a direct contribution to employment and the generation of wealth, and thus tax revenue, within the EU. With [%] of our production exported from the UK and [%] exported from the EU we also make a positive annual contribution of some [€ million] to the UK's balance of trade and some [€ million] to that of the EU.

We have a direct interest in the environmental issues of PVC as [35%] of our chlorine production is consumed in the PVC chain. Our largest plant, at Runcorn in the United Kingdom, is also part of a highly integrated chemical manufacturing complex within which some of our production facilities are directly connected by on-site pipeline to the manufacturing facilities of EVC (the UK's largest producer of PVC) for vinyl chloride monomer (VCM) and for PVC. Waste treatment facilities, including high temperature incineration and liquid effluent treatment, are in part shared by the chlor-alkali, the chlorinated derivatives, and the PVC manufacturing operations on the site. Our parent company, ICI plc, also owns [%] of the equity of EVC.

Therefore, we welcome the publication of the European Commission's 'Green Paper' on the important environmental issues associated with PVC and very much appreciate the transparency of the public consultation process which gives us this opportunity for comment on the Green Paper.

Our comments below are divided into two main sections:

- general comments on the Green Paper.
- specific comments relating to the eight questions highlighted in the call-outs within the paper.

## **3. GENERAL COMMENTS ON THE 'GREEN PAPER'**

### **3.1 *The Horizontal Approach***

We commend the Commission's adoption of the PVC Horizontal Initiative, reflected in the Green Paper, as a useful exercise directed towards clarification of a number of difficult and controversial issues that have been vigorously debated over the last ten years. It is certainly appropriate when considering the environmental issues associated with PVC to adopt an integrated approach that attempts to assess the whole life cycle of PVC.

Nevertheless, there are two deficiencies inherent in the Horizontal Initiative which need to be taken into account in any socio-economic and/or political debate as to the options which might be adopted to maximise the considerable benefits offered by PVC while minimising its impact on the environment and human health. We discuss these briefly in the hope that they can adequately be reflected in the approach to be adopted by the Commission with regard to the environmental issues of PVC.

#### **3.1.1 Vertical Integration**

The PVC industry is very complex and extends not only downstream into a multiplicity of formulators, converters and fabricators but also upstream into the chlor-alkali industry. As some 35% of the chlorine output of the EU's chlor-alkali industry ends up in the PVC chain, any measures adopted with regard to PVC itself have the potential for major socio-economic effects on the chlor-alkali industry. While solutions implemented at the EU level have the advantage of minimising any distortion of the internal market (and are thus to be preferred to purely national initiatives by individual Member States), it has to be remembered that the chlor-alkali and PVC industries operate in a highly competitive global market. Therefore, measures adopted within the EU with regard to PVC are likely to have significant impacts on the competitiveness of the EU's chlor-alkali industry as well as on the PVC industry itself. These impacts need to be considered in assessing the relative merits of alternative approaches to dealing with the environmental issues raised with regard to PVC. It would not be appropriate to solve problems that may exist within the EU simply by 'exporting' the industry, with its associated employment and trade benefits as well as its associated

environmental challenges, to other regions of the world - possibly less willing or less equipped to seek out a sustainable future for PVC.

### **3.1.2 Substitution Policy**

As with all substances, as technical and scientific advances are made there may be specific applications for PVC where it would be appropriate to consider the option of substitution by other materials among other options for addressing environmental issues. Just as PVC itself has often substituted for less durable alternatives (e.g. wood) or more energy-intensive ones (e.g. concrete), there are likely to be instances where substitutes are proposed for PVC itself. These must be seriously assessed and considered. However, any such assessment needs to be based upon an unbiased comparison of all the pros and cons of PVC and any substitutes across the entire life-cycle. This is particularly important as the debate about 'chlorine' and 'PVC' has at times become somewhat emotive - which can stand in the way of the necessary cool and fact-based appraisal. In particular, the case for substitution needs to be made:

- on the basis of risk rather than intrinsic hazard: it is the combination of hazard and the potential for exposure that determines any threat (i.e. 'risk') to the environment and human health.
- on an even-handed and factual basis as to the merits and demerits, hazards and risks, both of PVC and of proposed alternatives: just as it is unacceptable that existing substances should be in circulation without adequate information on their hazards and risks, it is equally unacceptable that substitutes should be 'assumed' to be better without adequate evidence of this. In terms of the English expression, we need to take a precautionary approach to substitution and avoid leaping 'from the frying-pan into the fire' ('tomber d'un mal dans un pire').

### **3.2 The PVC Industry, its feedstocks and its products**

Section 2 of the Green Paper expresses some relating to emissions, discharges and losses associated with the production of VCM as the monomer feedstock for PVC. The Green Paper states: "*Emissions of chlorine, ethylene, ethylene dichloride, HCl, VCM and chlorinated by-products including dioxines [sic] to the working environment or the outdoor environment can occur (air and water). Several of these chemicals are well known toxic substances and strict emission control measures are therefore necessary. Several Community Directives apply to PVC and VCM production processes.*"

While it is true that some toxic chemicals are involved as closed-system intermediates in the production of VCM and its chemical precursors, it does not necessarily follow that these chemicals are emitted to the environment. Indeed, by virtue of the toxicity of, for example, chlorine the controls adopted, regulated, monitored and assured are extraordinarily strict - as indeed they should be. Numerous Community Directives as well as a plethora of national and local regulation and legislation is applied to the chlor-alkali industry to ensure that, whatever chemicals may be involved in its processes, these are not emitted to the environment. Whether we are discussing PVC, or possible substitutes for PVC, there will be toxic substances involved at various stages of the life cycle. It is proper to ensure that these are adequately managed and controlled, but there is nothing particularly unique about PVC in this respect. Perhaps a sentence needs to be added to this part of the discussion that points out the extensive and rigorous controls in place (especially within the EU) on the PVC precursors and their by-products.

In this overall context, we welcome the approach of the Green Paper which - quite correctly - focuses more on the aspects of PVC which are unique to that substance, and in particular on the issues associated with the use of additives in finished products and the issues associated with the proper management of PVC-associated wastes. We believe that this is the correct focus of the Green Paper and hope that this focus will not be lost as the Commission proceeds with its work.

### **3.3 Other Horizontal Aspects**

Section 5 of the Green Paper addresses some of the more general and horizontal aspects that arise in the context of a broad consultation on PVC.

### **3.3.1 Voluntary vs. Binding Measures**

We support the use of a hybrid approach in which a mix of instruments is adopted, including both voluntary agreements and/or commitments as well as specific regulations or legislation where this is required to avoid distortion of the internal market.

Experience in a number of fields has demonstrated that voluntary initiatives can often be set up more rapidly than regulatory or legislative measures and can be flexible and effective in providing a sustainable framework for the future development of an industry. In this context we note the voluntary approach of the PVC Industry. As we understand it, this voluntary approach incorporates several features which should help in building stakeholder confidence and governmental acceptance of such an initiative, *viz.* criteria addressing issues of transparency and external verification. We believe that there is an overarching benefit to be derived from voluntary approaches such as this inasmuch as they create stakeholder commitment and bring peer pressure to bear as between competing companies in today's environmentally-conscious market-place to force laggards to match the benchmarks set by the best performers. Recognition by the Commission and the Member States of the industry's voluntary commitments would be a valuable contribution to the co-operative approach which is most likely to succeed in meeting the jointly held sustainability objectives of the industry, the regulators, and other interested stakeholders.

We accept that there may be a few specific areas in which it may be necessary to introduce new regulation or legislation in a more 'command-and-control' approach. However, this should very much be as last - rather than first - resort in order to maximise the advantages to be drawn from the more co-operative voluntary approach and to minimise risks to European competitiveness in the global market-place. The PVC industry, and its associated up- and down-stream industries, is complex and tightly integrated across a wide cross-section of economic activities. It is also an area of rapid technical innovation and development. Binding measures of a regulatory or legislative nature take time to introduce, agree and transfer into Member State legislation; such measures also take time to amend or adapt in the light of technical progress. It is therefore important that mandatory approaches avoid being too prescriptive on the basis of present-day conditions, e.g. as regards waste management, for fear of freezing requirements in a way that will be environmentally or socio-economically less than optimal at a future date. The guiding principle for any mandatory approaches adopted is that they should focus on the required environmental or health outcomes rather than on specifics of the way in which these are to be achieved.

### **3.3.2 Substitution Policy**

See comments offered under §3.1.2 above.

## **4. SPECIFIC COMMENTS WITH REGARD TO THE EIGHT QUESTIONS POSED IN THE GREEN PAPER**

ICI Chlor-Chemicals is not a producer, compounder or fabricator of PVC and does not claim to have detailed knowledge of all of the technical details, e.g. of PVC additives or of PVC waste management. However, we do recognise in the points raised within the Green Paper a number of issues whose nature is identical with, or closely paralleled by, issues in our own industry. We hope that by standing slightly aside from the details of PVC we can offer a useful perspective based on our own extensive general experience, in our own contexts, of some of the scientific principles, and some of the techniques and technologies addressed.

### **4.1 The Use of Additives in PVC**

The Green Paper correctly notes that the use of additives - particularly plasticisers and stabilisers - is more extensive in the case of PVC than of other bulk plastic materials and thus constitutes a distinguishing characteristic of the PVC chain. We hope that the Commission will therefore have the opportunity for very full consultation with the manufacturers and suppliers of these additives in order to draw on their detailed knowledge of their properties, any potential for substitution and the advantages and disadvantages of such substitution. It will be important in any EU policy on PVC to distinguish between the problems intrinsic to the polymer itself (where PVC itself must compete with alternative products and technologies) and those specific to additives (which may equally require resolution, but which do not directly impugn PVC).

#### 4.1.1 Stabilisers

The Green Paper correctly identifies the use of heavy metal (cadmium and lead) stabilisers as the potentially problematic aspect of PVC stabiliser technology. In this context, we would like to draw the attention of the Commission to the UN/ECE Heavy Metals Protocol to the Long-Range Transboundary Air Pollution Convention (LRTAP). We believe that this Protocol should have been explicitly referenced in the Green Paper and should be taken into full consideration in addressing the subject PVC issues. This Protocol, signed in Aarhus in 1998, specifically addresses the main environmental issues arising from various uses of cadmium and lead - including their use in products. The European Commission and the Member States were much involved in the development of the text of this Protocol which is currently awaiting sufficient ratifications in order to enter into force. We encourage the Commission and the Member States to ratify. In particular, Annex VII of the Protocol specifically provides guidance on Product Management Measures which include:

- the substitution of products containing one or more intentionally added heavy metals listed in annex I<sup>1</sup>, if a suitable alternative exists;
- the minimization or substitution in products of one or more intentionally added heavy metals listed in annex I;
- the provision of product information including labelling to ensure that users are informed of the content of one or more intentionally added heavy metals listed in annex I and the need for safe use and waste handling;
- the use of economic incentives or voluntary agreements to reduce or eliminate the content in products of the heavy metals listed in annex I; and
- the development and implementation of programmes for the collection, recycling or disposal of products containing one of the heavy metals in annex I in an environmentally sound manner.

We believe that the Heavy Metals Protocol provides important guidance to the Commission and to the PVC industry as to how the issues of cadmium and lead stabilisers in PVC might best be dealt with. In particular, we note the following benefits of the approach adopted:

- the measures listed above are in Annex VII which provides *guidance* rather than attempting to mandate specific measures in a 'one size fits all' approach.
- the requirement for 'suitable' alternatives as a pre-condition for substitution; we take this to imply some level of knowledge of the socio-economic and environmental consequences of substitution.
- the explicit linkage between product management (heavy metal stabilisers) and waste handling: the problems of waste management are significantly reduced to the extent that the heavy metal stabiliser issue can be addressed.
- the requirement for collection, recycling or disposal 'in an environmentally sound manner' establishes an objective and a yardstick without being prescriptive as to the particular measures or techniques that might best meet that objective in any particular instance.
- the explicit encouragement given to the use of voluntary agreements.

Building on these general principles, we note that:

- the European stabiliser producers (ESPA) have committed to a cessation of marketing of cadmium stabilisers in Europe within one year and have recommended that all converters stop using cadmium stabilisers from March 2001.
- the problem of lead stabilisers is recognised by the PVC industry but appears to be more difficult to solve as there are not yet suitable substitutes for lead in all applications. However, the industry has committed to investment in the development of alternatives, and has made transparent commitments to reporting and monitoring of lead use.

#### Question N° 1 - Stabilisers

In view of the foregoing, we believe that:

---

<sup>1</sup> cadmium, lead and mercury

- the voluntary commitment of the PVC industry on cadmium and lead should be implemented.
- the legislative phase-out of the use of cadmium stabilisers would be appropriate if, but only if, there were evidence - say by end-2001 - that the voluntary approach of ESPA had failed.
- the PVC industry should be encouraged to develop further voluntary commitments on lead.
- the UN/ECE Protocol on Heavy Metals should be ratified by the Commission and the Member States and should be implemented.

#### **4.1.2 Plasticisers**

We have been concerned by the emotion surrounding much of the debate on phthalates which seems to have obscured rather than illuminated the underlying scientific and political issues. We accept that there is a great deal of public concern about phthalates and regret that this seems not to be accompanied by a similar level of public knowledge of the underlying facts so that the public can participate in a properly informed debate as to the best approach to dealing with any of the environmental and health issues that have been raised. While acknowledging that there is an inevitable political aspect to this debate, we would encourage the Commission to listen closely to the advice of its own Directorate on Health and Consumer Protection and in particular the Scientific Committee on Toxicity, Ecotoxicity and Environment (CSTEE) and to adopt a longer-term science-based approach which may prove more durable than an approach too heavily weighted towards political considerations which may prove rather volatile.

In addition, the findings of all relevant independent peer-reviewed scientific research should be taken fully into account. This should include:

- consideration of the different phthalate chemicals as individual chemical entities: the differences between phthalates in health and environmental properties seem to be at least as great as any similarities between members of this large group of chemicals.
- consideration of ongoing risk assessments: this need not cause undue delay in this instance as the outcomes are expected by end-2000, i.e. within just three months.

#### Question N° 2 - Plasticisers

In view of the foregoing, we believe that:

- decisions on the need for specific measures on the use of phthalate plasticisers in PVC should await the outcome of the ongoing risk assessments, should be science-based and should respect the differences between individual phthalates. In some cases the substitution of one phthalate for another may represent an environmentally favourable solution and should not be inhibited by treatment of all of these diverse chemicals as one.
- the PVC and plasticiser industry should be encouraged to make voluntary commitments as appropriate in the light of the outcomes of the above risk assessments.
- the need for legislative measures should be determined in the light of the success or otherwise of the industry to make appropriate and sufficient voluntary commitments to risk reduction measures commensurate with any determination of risk from the above risk assessments.

#### **4.2 The Waste Management of PVC**

We note that the European PVC producers and their industry partners have recently signed a Voluntary Commitment which puts together a challenging ten-year plan covering all aspects of the life cycle of PVC. This is backed by a programme of financial investment of up to €25 million per year in order to achieve specific quantifiable targets. The scheme is intended to ensure the responsible and sustainable management of PVC products at the end of their useful service life.

The problems of PVC waste management are extremely complex and still evolving in view of the long service life-times of many PVC products in comparison with the lower durability of many of the products which they have replaced. These long service life times represent an efficient use of natural resources by providing long utility from the raw material and energy inputs. They also represent an opportunity to seek out optimal solutions to waste management problems as the volumes of waste concerned are not yet overwhelming. Because of the enormous range of applications for PVC products the types of waste also

vary widely - both in terms of their physical and chemical characteristics and in terms of the logistics associated with collection, collation, sorting and recovery and/or disposal. This strongly suggests to us that there are inherent difficulties and dangers in adopting a 'broad brush' legislative approach which risks almost certainly leading to inappropriate outcomes in some sectors however appropriate it may be for others. On the other hand, the development of sector- or product-specific legislative solutions could be very intensive in terms of the administrative and legal resources required to develop, negotiate, adopt and implement detailed legislation or regulation. It would also be very difficult - and inappropriate - to develop detailed legislation or regulation on PVC without considering the impact on other wastes arising in each sector addressed.

In broad terms, therefore, our answers to the following questions are governed by the following general principles:

- a sector-specific approach to waste management is likely to be more effective - and certainly more cost-effective - than a material-specific approach. This is not to underestimate the challenges presented by the need for the environmentally acceptable management of PVC wastes, but to stress the need for dealing with them in the context of an integrated waste management strategy tailored to the waste arisings, logistical characteristics and management needs of each major use sector.
- in view of the complexities of the issues and the constantly changing and evolving nature of markets, voluntary initiatives and commitments should be strongly encouraged. Legislative and regulatory measures should be adopted in support of voluntary measures only where it is necessary to fill obvious gaps in performance against agreed targets, or where stakeholders demonstrably require further encouragement. Even then, mandatory measures should address environmental objectives rather than the particular means of achieving them.

#### Question N° 3 - Mechanical Recycling of PVC Wastes

The generation of PVC wastes is only now reaching levels where the economics of large-scale recycling are beginning to become attractive. As the volumes of waste rise in the future with the retirement from service life of long-lived products, it is likely that present estimates of recycling percentages will prove to have been pessimistic. In particular, it has to be recognised that mechanical recycling is only a part - albeit an important one - of any solution. Feedstock recycling, and any emergent technologies, must also be taken into full consideration. Waste streams are very complex and therefore mandatory collection and recycling targets are unlikely to be helpful and may result in an increase of 'down-cycling' at the expense of recycling and 'up-cycling'. On the other hand measures to encourage and facilitate the use of recycled PVC materials may be helpful - but will require close consultation with industry to make sure that the effects of any suggested measures are beneficial rather than counter-productive. In particular, standards for recycled products would be welcome - so long as they do not adversely affect end-product performance.

As the situation is rapidly evolving, technologies are continually developing, and the details of the economics of recycling are as yet far from clear it would be unwise to rush prematurely into legislative and regulatory measures. It is as yet not at all certain which measures, if any, would be most effective. Instead, there should be whole-hearted support for the voluntary initiative of the industry to improve and financially support the collection and recycling of the most relevant PVC waste streams. It is too early to say whether the present voluntary approach will be sufficient. It should be kept under review - with perhaps a first formal review in five years time - to determine whether there is a need for further or even more challenging voluntary commitments or for the existing commitments to be backed by carefully selected regulatory measures.

#### Question N° 4 - Mechanical Recycling of Wastes containing Heavy Metal Stabilisers

It is acknowledged that these wastes present some particular issues. The main thrust of voluntary efforts should be to work towards the discontinuation of the use of cadmium and lead stabilisers in order to minimise future arisings of wastes of this type. If these efforts develop successfully - as seems to be the case at least for cadmium - then specific measures may not be required. To the extent that this is not the case, preference should be given to closed-loop systems which do not involve transfer of the heavy metals from the relatively safe context of a tightly-bound polymer matrix to forms in which they are more environmentally available.

#### Question N° 5 - Chemical Recycling of PVC Wastes



In general terms, chemical recycling is a relatively new option for PVC waste management and full-scale operation will be required before it is possible to arrive at a proper assessment of technical adequacy, environmental benefits and operational economics. While it is unlikely ever to replace completely the use of mechanical recycling, there is a potential for some environmentally beneficial solutions and the PVC industry should be encouraged in its Voluntary Commitment to progress in this area and, specifically, to identify by 2002 the most appropriate technology variant for scale-up.

It is therefore too early to be able to identify specific regulatory or legislative measures and for the present the industry should be challenged to deliver and perhaps to further develop, its present voluntary initiatives.

#### Question N° 6 - Incineration of PVC Waste

We note the comments in the Green Paper relating to PVC incineration which suggest that the chlorine content in waste streams can contribute to dioxin formation "even though the actual mechanism is not fully understood". We agree that at present "there does not seem to be a direct quantitative relationship between chlorine and content and dioxin formation" and are not aware of any evidence, based on real-life operation of properly operated high-temperature incinerators, that suggests that there is any particular threshold above which such a relationship might exist. We note that the Green Paper cites Wikstrom (1996) as suggesting a threshold of 1% of chlorine - but also note that this relates to the combustion of an artificial fuel in a laboratory reactor. This result does not seem to be consistent with other studies which suggest that the determinant for dioxin formation is temperature and incinerator operating conditions rather than the incinerator feed. These issues were exhaustively considered by experts in the process of negotiating the 1998 Protocol on Persistent Organic Pollutants (POPs) to the UN/ECE Long-Range Transboundary Air Pollution (LRTAP) Convention. The view expressed in this Protocol is that:

*"The primary measures regarding the incinerated wastes, involving the management of feed material by reducing halogenated substances and replacing them by non-halogenated alternatives, are not appropriate for municipal or hazardous waste incineration. It is more effective to modify the incineration process and install secondary measures for flue-gas cleaning. The management of feed material is a useful primary measure for waste reduction and has the possible added benefit of recycling. This may result in indirect PCDD/F reduction by decreasing the waste amounts to be incinerated."*<sup>2</sup>

It is very doubtful whether further research is likely to change this conclusion for real-life installations and resources would be better devoted to the continuing optimisation of incineration technology *per se*.

Accordingly, and recognising that any integrated approach to waste management will incorporate incineration as an important part of the solution, we believe that the chief issues are the handling and fate of hydrogen chloride (HCl, the primary product - other than carbon dioxide - of PVC incineration) and considerations of energy recovery (and consequent climate change amelioration). In general:

- incineration technologies which allow HCl recovery are to be preferred to those which require its neutralisation, although it has to be recognised that the value of the recovered HCl will vary widely with geographical location and the extent to which incineration is integrated with chemical processes capable of making beneficial use of the HCl generated. The PVC industry has committed to the development of HCl recovery technologies.
- recovery of the energy value of PVC is to be preferred to the loss of this resource.
- diversion to land-fill will not normally be as clean as incineration in a well-operated modern high-temperature incinerator - and loses the energy recovery.

However, the situation is very complex and the above generalisations may not apply in every individual case.

The suggestion of 'internalising the costs of incineration in the price of new PVC products' raises complex legal issues, including that of the relative competencies of the Commission and the Member States. It would appear to have a *prima facie* effect of distorting the internal market as between the cost of life cycle management of PVC vis-à-vis the cost of life cycle management of other plastics and other potential PVC substitutes. For example, the combustion of wood is a potential source of dioxins and is usually carried out at the lower combustion temperatures associated with dioxin formation rather than at the higher temperatures present in PVC incinerators.

---

<sup>2</sup> UN/ECE Protocol on Persistent Organic Pollutants, Annex V, §15.

The sheer complexity of the issues mitigates against legislative solutions and suggests that available resources would be better used in the encouragement of the development of flue-gas cleaning technologies that reduce the amounts of solid residues generated and maximise HCl recycling. This would appear to be an area where legislative and regulatory measures should be confined to controls on the emissions from incinerators - such as the Waste Incineration Directive, which includes quantitative emission limits for dioxins - and voluntary measures would be more effective in encouraging the development of the most sustainable technologies.

#### Question N° 7 - Land-Filling of PVC Wastes

We do not have specific knowledge in this area, although - as outlined in the answers to previous questions - our preference would normally be for (a) waste minimisation measures, e.g. recycling, and (b) incineration - where the fate of the PVC molecule (and of additive molecules) is clear and controlled. We do, nevertheless, note that the discussion in the Green Paper relies rather heavily on a single study<sup>3</sup> when it suggests that the disposal of certain PVC wastes in controlled landfill sites should be regulated. It is not clear to us whether any regulation beyond the present Landfill Directive is required. We note that other studies are cited, e.g. that by the Technical University of Hamburg-Harburg<sup>4</sup> and would like to see a fuller consideration of work already completed before arriving at any conclusion as to the need for further research.

At present it would appear that existing legislative and regulatory measures suffice. Ratification of the existing UN/ECE Directives of POPs and Heavy Metals would also be beneficial.

### **4.3 Horizontal Strategy on PVC**

Our comments on the Horizontal Strategy are contained in §3 above where we address the issues of (a) the need for the Horizontal Strategy to take account of vertical integration issues (§3.1.1), (b) aspects of Substitution Policy (§3.1.2), and (c) the relative rôles of voluntary and mandatory approaches (§3.3.1)

#### Question N° 8 - Substitution Policy

On the basis of the analysis in §3, and particularly those in §3.1.2, we would again stress that no regulation of any single material is appropriate without a full and factual analysis not only of any hazards and risks presented by that material, but also those presented by any suggested substitutes. Furthermore, for a material with as enormously wide a spectrum of uses as PVC it is extremely unlikely that there will be single substitutes covering more than a small fraction of applications (cf. the fragmentation of the CFC replacement market as compared with the CFC market). To the extent that substitution is considered, it might be better to focus on making sure that - for example by substitution of inappropriate additives - PVC is rendered and seen to be a fully sustainable product in each of its applications - environmentally, economically and socially. The PVC industry's Voluntary Commitment provides an excellent vehicle for developing the PVC industry towards this sort of sustainable future and deserves the full encouragement of the Commission - both as to the implementation of the existing commitments and as to a continuing dialogue to seek out further improvements.

---

<sup>3</sup> Argus (undated), in association with the University of Rostock.

<sup>4</sup> Mersiowski (1999), ECVI, Technical University of Hamburg-Harburg.

## Messages from John Stuart :

1

Thank you very much for the opportunity to comment on the European Community's Green Paper on PVC. As an employee of Occidental Chemical Corporation , a manufacturer of PVC resin in North America, I am concerned about the potential impact of the European Union's actions on international trade, my company's business, our customers' business and my own job.

European plastics waste management policy should include all the options: landfill, recycling and incineration. Sometimes separation of plastic applications is not possible or cost-effective. In this case, incineration recovers the energy content of plastic materials.

Each material has its own incineration cost. Even though the neutralization residues' disposal costs appear to be significant for PVC, PVC emits less CO<sub>2</sub> when combusted. Total life cycle costs may be comparable to those of other materials. Before deciding to divert one material from incineration, all material specific costs--operating and environmental--have to be taken into account. Moreover, new technologies allow minimization and/or recycling of neutralization residues. The European PVC Industry has committed to research such technologies.

The European Union's Green Paper rightly notes that research and regulation the world over shows that design and operation of incinerators is the most important consideration for dioxin minimization. Chlorine/PVC content is, at most, a minor contributor.

PVC is a modern material yet it has significant history. Resin, additive and product technology is improving continuously; however, the long track record of safety and utility of vinyl should not be ignored. The European industry, through its voluntary commitment is working to address the substantive issues outlined in the Green Paper. This is a progressive approach to environmental concerns, and should be the basis for European policy on PVC.

2

Since the European Community's Green Paper could form the basis for European Union's regulation of PVC, I am pleased to be invited to comment on aspects of it. I am an employee of Occidental Chemical Corporation, a manufacturer of PVC resin in North America and I am concerned about the impact EU action might have on international trade, my company's business, our customers' business and my own job.

Any legislation regarding one single material is inappropriate without having equally analysed its alternatives. Such a comparison has to consider the whole life cycle of each specific application and not just end-of-life aspects. I look forward to the set of horizontal studies that must be done on every other material before such life cycle comparisons can rationally be made.

As a serious step forward on the track to sustainability, the PVC Industry has offered a Voluntary Commitment for improvement in many of the areas addressed by the Green Paper. It provides an opportunity to demonstrate good product stewardship by continuously improving manufacturing processes, addressing additives issues, increasing recycling and setting up a financial scheme to achieve the targets.

Voluntary action by companies is a progressive way of accomplishing environmental goals in cooperation with government. It should be the preferred EU policy.

Thank you,

Message from Leo Van Der Geer:

Sono Leo van der Geer, Direttore Generale di una società farmaceutica in Italia e vorrei esprimere una mia considerazione personale a **difesa del PVC**, basata sulla mia esperienza nel settore in cui opero.

E' infatti impossibile pensare di mettere in distribuzione specialità farmaceutiche in forme secche (compresse rivestite o non) se non in blister **in PVC** che permette la non contaminazione esterna delle compresse stesse.

Inoltre non vedo grossi problemi al recupero energetico e/o al riciclo dei blister **in PVC**.

Vi ringrazio della Vostra attenzione e cordialmente saluto.

Leo van der Geer

Message from M.A Moretton:

Saint-Fons, le 16 octobre 2000

PVC le Livre Vert

à l'attention de M. SCHULTE-BRAUCKS

Monsieur,

Je suis employée de la société ATOFINA située à Saint-Fons près de Lyon. Je travaille dans une usine productrice de PVC. Je connais depuis longtemps tous les avantages que présente ce matériau moderne et me sens très concernée par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

▷ Le PVC est un des matériaux synthétiques les plus modernes :

▷ Il offre une valeur ajoutée importante à la société, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, des châssis de fenêtres sans entretien, de bonne performance énergétique, des tubes de distribution d'eau assurant leur fonction pendant 100 ans etc (Il me semble maintenant tout à fait impensable d'imaginer un monde sans PVC.

▷ Notre société fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications.

▷ Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.

▷ Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.

▷ De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.

▷ L'importance de l'industrie du PVC, y compris les petites et moyennes industries transformatrices, est considérable en Europe.

C'est pourquoi je soutiens l'Engagement Volontaire de l'industrie de PVC qui nous a été présenté dans nos usines.

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC.

Je souhaite que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Je souhaite que ce témoignage supplémentaire vienne vous conforter dans la conviction que le PVC est un matériau d'avenir qui continuera à faire ses preuves.

Je vous prie de croire, Monsieur, à l'expression de mes sincères salutations.

M..A. MORETTON

Message from Martha Ackel:

Thank you very much for the opportunity to comment on the European Community's Green Paper on PVC. Since it could form the basis for European Union's regulation of PVC, I am concerned about the impact the Green Paper might have on international trade, my company's business, our customers' business and my own job.

My company, Occidental Chemical Corporation, a manufacturer of PVC resin is well aware of the opportunities and costs associated with mechanical recycling. I believe the European PVC Industry is correct to favor end-use specific, not material specific, recycling targets. As with any other material, PVC has to do its part--no more and no less--to achieve agreed upon targets. Setting targets and organizing recycling by end-use application is the most rational and cost effective approach.

Mechanical recycling is appealing and can make a significant positive environmental contribution; however, to be viable economically candidates for recycling must be easily collected and sorted. They must be available in significant quantities and require minimum transportation. These needs apply to all plastics, and in fact, all materials.

Responsibility for satisfying these conditions can be shared by industry and government. For PVC window frames and pipes, voluntary commitments have been made by the European industry to recycle returned material. For other applications, work is ongoing to make similar voluntary take-back approaches feasible.

New recycling technology has been commercialized recently by individual companies and industry associations as part of the industry's voluntary approach. Voluntary action is a progressive way to solve modern problems of modern materials like PVC. It should form the basis for European Union's action.

Thank you,



Message from Martine Van Butsel :

Ik ben Martine Van Butsel en ik werk al 20 jaar in de PVC industrie. Wij hebben als commerciële organisatie steeds met diverse takken van de industrie contact gehad. In die periode hebben we een ganse evolutie meegemaakt qua ontwikkeling van nieuwe producten en toepassingen in PVC die vandaag de dag quasi onvervangbaar zijn en die ons het leven heel wat aangenamer, gemakkelijker en hygiënischer gemaakt hebben, zoals in de medische sector, verpakking van levensmiddelen, PVC raamprofielen, duurzaam, weinig onderhoud tov hout (dat ook met chemische en misschien schadelijker producten behandeld wordt) vloerbekleding, allerhande speelgoed, gemakkelijk afwasbaar. Ik denk hierbij ook aan de kledingindustrie, en bijv imitatie leder, goedkopere alternatieven die voor een breder publiek bereikbaar zijn. We staan er niet bij stil, maar deze producten dekken een belangrijk deel van onze behoeftes.

We zien rondom ons dat reeds heel wat gerealiseerd werd, om PVC milieuvriendelijker te maken, door voortdurende verbetering van productieprocessen en producten en recyclage.

Daarenboven zijn heel wat mensen tewerkgesteld in deze sector, wat zou de impact zijn op de tewerkstelling als deze acties tegen PVC verder blijven aanhouden ? Wordt hier ook voldoende aandacht aan gegeven ?

Martine Van Butsel

Message from Michel Vanhems :

PVC le Livre Vert

Cher Monsieur Krämer,

Je suis employé de la société CECA, groupe ATOFINA, située à Paris et active dans l'industrie des additifs plastiques et du PVC. Je me sens très concerné par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

\* Le PVC offre une valeur ajoutée importante à la société, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, des châssis de fenêtres sans entretien, de bonne performance énergétique, des tubes de distribution d'eau assurant leur fonction pendant 100 ans etc(

\* Notre groupe fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications.

\* Je sais que d'autres matériaux plastiques, ou naturels peuvent être utilisés dans certaines applications mais ceux-ci sont souvent moins efficaces en terme économique et/ou écologique que le PVC.

\* Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.

\* Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.

\* De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.

\* L'importance de l'industrie du PVC, y compris les petites et moyennes industries transformatrices, est considérable en Europe.

C'est pourquoi je soutiens l'Engagement Volontaire de l'industrie de PVC qui nous a été présenté dans nos usines.

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC.

Je souhaite que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Message from Murray Winstanley:

Australian Vinyls manufactures and sells approximately 200,000 tonnes of PVC resin and compounds per year. As the PVC market is very largely global in nature, we have much at stake in important initiatives in other parts of the world. The Commission's draft Green Paper on the Environmental Issues of PVC is such an initiative. Accordingly, I wish to make the following submission, and I thank you for the opportunity to do this.

On my understanding the Commission is considering three options in dealing with environmental issues associated with PVC:

1. A cooperative approach based on a voluntary commitment from the European PVC industry<sup>1</sup>;
2. A legislative approach based on a PVC Directive;
3. Some mix of the above.

The policy adopted by the Commission will set a powerful precedent for other parts of the world. It is important to the Australian and global PVC industry that these procedures are fairly based, and that they encourage good industry practice for the future.

I request the Commission adopt the first of the above options.

The European Industry's Voluntary Commitment includes specific undertakings in respect of each of the following:

1. Emissions during manufacture;
2. The use of heavy metal stabilisers;
3. The use of phthalate plasticisers; and
4. End-of-life recovery and recycling.

I believe this commitment would set a sound precedent for other materials and products in the EU, and the PVC industry elsewhere in the world.

In Australia, the debate around PVC has been very moderate, much influenced by the twice-published opinion of the CSIRO, the nation's pre-eminent scientific authority, that: at worst:

“the adverse environmental effects of using PVC in building products are (very small, and) no greater than those for other materials”<sup>2</sup>

PVC has a good standing in the Australian scientific community. With the experience of the Sydney Olympics, where the environmental guidelines were largely developed without reference to credible scientific input and at the behest of an environmental pressure group, much importance has been placed by government, industry and the labour movement on the absence of unjust discrimination against this or any other product. All products must be treated with equal objectivity.

I request the Commission choose the option which will preserve due and fair process, without unfair discrimination against this material. I encourage the European PVC Industry's Voluntary Commitment.

Yours sincerely,

**Murray Winstanley**

---

<sup>1</sup> “Sustainable Development – a Voluntary Commitment of the PVC Industry, March 2000

---

<sup>2</sup> CSIRO, "The environmental aspects of the use of PVC in Building Products", September 1996.  
Second Edition, June 1998.

**OBJET : LIVRE VERT PVC**

Messieurs,

Je travaille au Centre de Recherches Rhône Alpes de la société ATOFINA et me sens très concerné par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

- ⇒ Le PVC est un des matériaux synthétiques les plus modernes :
- ⇒ Il offre une valeur ajoutée importante à tout un chacun, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, châssis de fenêtres sans entretien, de bonne performance énergétique, tubes de distribution d'eau assurant leur fonction pendant 100 ans, etc.
- ⇒ Notre société fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications.
- ⇒ Je sais que d'autres matériaux plastiques ou naturels peuvent être utilisés dans certaines applications mais ceux-ci sont souvent moins efficaces en terme économique et/ou écologique que le PVC.
- ⇒ Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.
- ⇒ Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.
- ⇒ De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.
- ⇒ L'importance de l'industrie du PVC, y compris les petites et moyennes industries transformatrices, est considérable en Europe.

C'est pourquoi je soutiens l'Engagement Volontaire de l'industrie de PVC qui nous a été présenté dans notre établissement.

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC. Je souhaite enfin que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Je vous prie d'agréer, Messieurs, l'expression de mes sentiments respectueux.



Noëlle BERGER

Message from Paul Brusseel :

In bijlage, mijn commentaar omtrent het "Green Paper" .

Mijn persoonlijke ervaring heeft mij geleerd dat PVC een zeer veelzijdige kunststof is, waarvan de soepelheid / mechanische eigenschappen op een eenvoudige manier (ttz door aanpassing van de dosis weekmaker) kan gemoduleerd worden .

Zijn intrinsieke eigenschappen (amorfe structuur, zelfdovend (PVC-U), ...), en de uitgebreide kennis omtrent additieven (stabilisatoren, UV-bescherming, ....), welke in de markt bestaat, maakt dat de eindprodukten vrij specifiek zijn . Testen met andere polymeren hebben dan ook getoond dat vervanging niet evident is, en men in sommige gevallen verkiest om PVC verder te gebruiken .

Verder is het zo dat de industrie voortdurend werkt aan milieuvriendelijker formulaties . Denken wij hierbij bijvoorbeeld aan de vervanging van loodstabilisatoren door Ca/Zn .Laten wij niet vergeten dat lood als pigment (Pb-chromaat / sulfaat) ook in de Polyolefinefilmen (PP, PE) toegespast wordt, en dat PP / PE voor bepaalde toepassingen (bv vuurvertragende) sterk gevuld moet worden met additieven, waarvan het milieuvriendelijk karakter ook niet steeds optimaal is .

Met vriendelijke groeten  
Paul Brusseel

Message from P.E. Buckmaster:

## ENVIRONMENTAL ISSUES OF PVC - CONSULTATION PROCESS

You will be aware that the European Commission has recently published a Green Paper on 'Environmental Issues of PVC'. This is intended to be used by the Commission as a basis for consultations with stakeholders and the European Parliament prior to it finalising its policy in early 2001.

I am employed by European Vinyls Corporation, a major manufacturer of PVC in the UK and Europe. My colleagues and I are concerned that our product appears to be being discriminated against. There are no Green Papers being proposed for comparable materials. Extreme environmental pressure groups such as "Greenpeace" are even calling for the phase-out of PVC in all applications despite the fact that in many areas, it is unsurpassed in all respects, as "cradle to grave" studies for alternative materials show time and time again.

We know that it is important that the case for PVC is thoroughly understood - particularly by MEPs and MPs who could be involved in possible legislation coming out of the Green Paper consultation process.

The key points in support of PVC are the following :-

1 PVC is a competitive low cost material with many excellent properties which have led to widespread use including many essential life saving and critical safety applications.

2 PVC has been well researched for over 60 years and manufactured in substantial quantities for over 50 years. It is well known and well understood.

3 During the long period of manufacture, emissions from the manufacturing process have been systematically reduced to very low levels and have no impact on surrounding communities.

4 During the long period of usage of PVC, disposal and recycling options have been developed which are comparable with other plastics. (The long life of PVC in applications such as pipes and windows means that many original items are still in use).

5 Unbiased Life Cycle Analyses which compare PVC with alternative materials generally show that PVC has a high eco-efficiency.

6 PVC is more sustainable than most other plastics, as less than 45% of its weight is derived from oil - the rest is derived from salt, a very common natural material.

We would like fair treatment for our industry as we believe that if all factors are taken into account, PVC should have a promising future.

The PVC industry in the UK is extensive, embracing some 750 companies and employing 50,000 people. Its contribution to exports amounts to £1.5 billion. Products made from PVC have the ability to contribute massively towards Sustainable Development objectives thanks to their durability, safety, energy efficiency and light weight.

We would like you to ensure that when the debate takes place in Brussels, PVC gets a fair crack of the whip, and is not disadvantaged in its treatment, when compared with competitive materials.

Yours sincerely

P E Buckmaster



Message from Pedro Vidal :

## **da Industria de Plásticos**

### **1. APRESENTAÇÃO**

A Simala, SA., cuja denominação inicial era Plásticos Simala, SA., foi constituída em 1958, como empresa transformadora de plásticos, fabricando utensílios domésticos, plásticos ornamentais, réguas de estores entre outros.

A forte concorrência nesta área de negócio levou a que, em 1972, a sua actividade fosse reorientada para a produção de compostos.

O Grupo Meneses, accionista da Simala, SA. decidiu proceder a significativos investimentos de modernização. Neste âmbito assume particular relevância a criação de uma nova empresa - A Clean Compounds – inserida no mercado dos compostos de PVC . A génese desta empresa assentou numa ideia base " A recolha e valorização de resíduos de PVC provenientes de clientes e da Industria do PVC em geral". Actualmente emprega 27 pessoas.

Exprime-se assim a estratégia deste grupo de, participando nas preocupações europeias e nacionais de defesa do ambiente, explorar novas oportunidades nesta área.

Este projecto custou 1,3 milhões de contos, dos quais 400000 destinaram-se à aquisição de equipamentos destinados à preparação, transporte e valorização dos resíduos de PVC. Este projecto foi financiado pelo Estado Português através do PEDIP.

A capacidade instalada é de 65 tons/dia e a regeneração de PVC representa actualmente 15 %.

Presentemente estamos a desenvolver uma rede de recolha e classificação de resíduos de PVC em Portugal e Espanha. Desde que entrámos em laboração temos sido contactados por vários transformadores de PVC no sentido de darmos um fim aos diversos desperdícios, notando-se por parte destes um interesse crescente na valorização dos mesmos.

Parte dos resíduos que eram depositados nos aterros sanitários da área de implantação das empresas, estão a ser regenerados pela Clean Compounds.

### **2. ADITIVOS**

#### **2.1 Estabilizantes**

Relativamente aos estabilizantes e á questão ligada á utilização de metais pesados, informamos que não utilizamos Cádmiio nos PVC's por nós fabricados. A utilização deste aditivo foi irradiada à cerca de 10 anos. Utilizamos complexos e sais unitários de Chumbo, e introduzimos a utilização de estabilizastes de Ca/Zn à cerca de 4 anos ( nesse ano o consumo de Ca/Zn foi 6,3% para 90 % Pb ) . Desde essa altura, temos incrementado a sua utilização ( actualmente consumimos 20% de Ca/Zn), contudo a baixa estabilidade térmica, absorção de humidade e problemas de resistividade eléctrica impedem a sua utilização para produtos mais específicos, ao mesmo tempo que o preço mais elevado, comparativamente aos estabilizantes de Pb, dificultam a utilização noutras aplicações onde o preço é determinante na efectivação do negócio. Apesar das contrariedades inerentes aos Ca/Zn, tem-se verificado que os produtores tem evoluído e apresentam produtos cada vez mais eficientes e eficazes.

#### **2.2 Plastificantes**

Terça-feira, 24 de Outubro de 2000

Os plastificantes mais usados nesta indústria são, como se sabe, os vários tipos de ftalatos. A nossa empresa não foge à regra.

Em testes efectuados, verificou-se que havia uma grande migração de ftalatos nos brinquedos sujeitos a sucção. Ao que sabemos a comunidade científica continua dividida, pois não estão definidos testes específicos e não há reprodutibilidade nos resultados obtidos nos vários testes realizados. Esta situação causou um alarmismo desmedido nos fabricantes de brinquedos que por uma questão de precaução exigiram a irradicação dos ftalatos, nos compostos utilizados em brinquedos. Após alguma pesquisa conseguimos produzir compostos de PVC isentos de ftalatos para utilização em brinquedos. O preço elevado impede a utilização em outros produtos.

Pensamos que a guerra contra os ftalatos visa unicamente atingir o PVC, pois ao que sabemos os resultados obtidos, nas várias pesquisas efectuadas indiciam não haver evidencia científica, que os ftalatos são prejudiciais aos seres humanos. Inclusivamente, a Comissão Europeia e a Organização Mundial de Saúde consideram que o DOP não deve ser classificado como carcinogénico.

Os Ftalatos não se acumulam na cadeia alimentar. São removidos nas estações de tratamento de águas e verifica-se que a migração de ftalatos em aterros sanitários é extremamente reduzida.

Esperamos que a informação fornecida lhe seja útil para o referido debate, estamos completamente disponíveis para qualquer esclarecimento adicional

Com os meus agradecimentos,

Pedro Vidal

Message from Rappresentanza Sindacale Unitaria :

Con la presente la sottoscritta "Rappresentanza Sindacale Unitaria" della società S.G.I.M.(gruppo Solvay) v'invita a riflettere, in caso di una motivata messa al bando del PVC sull'impatto occupazionale che l'industria del PVC stesso ha in tutta Europa.

Message from Rita Ambrosetti :

Il PVC viene utilizzato per produrre le nostre cucine in sostituzione del legno, nella moda e nella pelletteria (finte pelli) in sostituzione dei prodotti naturali derivati dalla uccisione degli animali.

Per dimostrarci veri ecologisti incrementiamo l'uso del PVC.

Message from Robert Bacon, Beverly P. Evans, Veronica Sanders, and Willy Oxy :

Thank you very much for the opportunity to comment on the European Community's Green Paper on PVC. I am an employee of OxyVinyls, LP , a manufacturer of PVC resin in North America, and I am concerned about the potential impact of the European Union's actions on international trade, my company's business and my job.

Chemical recycling is a new technology, still under development that is complementary to mechanical recycling. Even though it is most economically viable with pure streams, it has the potential to treat non-sortable and/or contaminated waste, including PVC. The European PVC Industry has committed to explore this recycling route, in order to identify the most appropriate technology by 2002. Scale-up and application to real waste will follow, pursuant to the Voluntary Commitment.

PVC is a modern material. Resin, additive and product technology is improving continuously. The European industry, through its voluntary commitment is working to address the substantive issues outlined in the Green Paper. This is a progressive approach to environmental concerns, and should be the basis for European policy on PVC.

Thank you,  
Robert Bacon

Message from Rolande Archambault :

**Commission Européenne  
Att : M. Krämer, DG ENV  
et M. Schulte-Braucks, DG ENTR  
200 rue de la Loi  
B-1049 Bruxelles  
BELGIQUE**

Pierre-Bénite, le 16 octobre 2000

## **LIVRE VERT PVC**

Cher Monsieur,

Je travaille au Centre de Recherches Rhône Alpes de la société ATOFINA et me sens très concernée par le livre vert de la commission. J'ai étudié attentivement les points, pour et contre de ce document, ainsi que ceux explicités dans l'Engagement Volontaire des producteurs de PVC.

Je souhaite faire les commentaires suivants :

- ⇒ Le PVC est un des matériaux synthétiques les plus modernes :
- ⇒ Il offre une valeur ajoutée importante à la société, par ses nombreuses applications telles que : équipement médical, emballage pharmaceutique, revêtement de sol pour la maison et l'hôpital, des châssis de fenêtres sans entretien, de bonne performance énergétique, des tubes de distribution d'eau assurant leur fonction pendant 100 ans, etc.
- ⇒ Notre société fabrique des compositions vinyliques prêtes à l'emploi ; nos produits sont reconnus comme sûrs dans leurs applications.
- ⇒ Je sais que d'autres matériaux plastiques ou naturels peuvent être utilisés dans certaines applications mais ceux-ci sont souvent moins efficaces en terme économique et/ou écologique que le PVC.
- ⇒ Des progrès énormes ont été réalisés dans nos usines pour réduire l'impact de nos rejets sur l'environnement.
- ⇒ Quel que soit le matériau considéré, les produits après leur première vie, deviennent déchets. Le recyclage du PVC progresse dans tous les pays d'Europe, et de nouvelles technologies sont en cours d'expérimentation : ceci permettra aux générations futures de traiter convenablement les produits PVC en fin de vie.
- ⇒ De nombreuses questions évoquées dans le Livre Vert s'appliquent à tous les matériaux et pas seulement au PVC. C'est pourquoi je ne comprends pas que la Commission insiste tant sur le PVC, en particulier.
- ⇒ L'importance de l'industrie du PVC, y compris les petites et moyennes industries transformatrices, est considérable en Europe.

C'est pourquoi je soutiens l'Engagement Volontaire de l'industrie de PVC qui nous a été présenté dans notre établissement.

En conclusion je recommande à la Commission de retenir les propositions de l'Engagement Volontaire : ce dernier permet l'approche la plus efficace pour améliorer la situation écologique et économique du PVC. Je souhaite enfin que le PVC soit traité comme tout autre matériau synthétique ou naturel.

Je vous prie d'agréer, Monsieur, l'expression de mes sentiments respectueux.

Rolande ARCHAMBAULT

Messages from Stefano Chiaramondia:

1

Dear sirs,

I'm very happy to take part into this very important wide public consultation about environmental issues of PVC.

The focus of my opinion is: PVC is a "global balance" winner. I clearly trust in a positive global evaluation of the total impact that PVC has in his life-cycle. Since the beginning, starting not completely from oil (end of oil reserves all over the world forecasted within year 2040) but from chlorine too, till to the end, with a complete and demonstrated recycling management, PVC is the safest choice for a wide kind of applications and end-uses, and it will be able to face the future challenges of progress.

2

Sono contento, in qualità di operatore del settore del PVC, di poter esprimere un mio parere anche sugli aspetti che riguardano gli additivi del PVC.

La questione coinvolge 2 ordini di additivi :

A) stabilizzanti

Tali additivi servono per rendere le mescole di PVC stabili durante il processo di trasformazione, impedendone la degradazione.

L'utilizzo del cadmio è già destinato a finire entro 1 anno per Impegno Volontario dell'industria del PVC, mentre riguardo al piombo tutte le informazioni disponibili ne confermano la sicurezza.

Ma l'industria del PVC non sta ferma: sono sempre più in aumento gli utilizzi di stabilizzanti a base di "metalli leggeri" quali stagno e calcio/zinco. Ne parlo a ragion veduta perchè lo stabilimento Benvic presso cui lavoro, a Ferrara (I), è dalla sua nascita dedicato al 100% a produrre compound di PVC "senza metalli pesanti" e "food grade" secondo le più severe normative internazionali in materia (EU, FDA, BGA, Kosher, ...).

B/plastificanti

I plastificanti più utilizzati per "ammorbidire" il PVC sono gli ftalati.

Nonostante gli approfonditi studi effettuati, nessuna reale pericolosità è stata appurata, e il PVC resta uno dei prodotti "leader" in applicazioni delicate quali accessori ad uso medico e imballaggi farmaceutici. L'unica decisione che mi sembra degna di essere riportata in questo contesto è: la IARC, Agenzia Internazionale per la Ricerca sul Cancro, ha declassato il DEHP, tra gli ftalati più utilizzati, da "potenzialmente cancerogeno per l'uomo" a "non cancerogeno per l'uomo" !!!!!

Confido che ogni orientamento che la Commissione Europea vorrà prendere sia guidato da una ragionata valutazione sull'impatto globale di un prodotto nell'intero ciclo di vita, per una scelta che sia di sviluppo, di lavoro, di crescita di una chimica pulita, eco-compatibile, che progredisce e che si impegna a migliorare: il PVC e i suoi sviluppi futuri (e ce ne saranno, molti sono già in nuce ...) fa a mio avviso pienamente parte di questo cammino.

3

Sono responsabile commerciale di Slvay Benvic Italia, una società del gruppo Solvay che si occupa della produzione e vendita di compounds di PVC.

Sono nel settore da ormai 8 anni, e ho potuto approfondire le mie conoscenze sulle tematiche relative all'impatto ambientale del PVC.

Vorrei concentrarmi in questa occasione sull'aspetto del waste management.

1) Il PVC è riciclabile meccanicamente: impegni volontari dell'industria sono già stati definiti per il settore dei profili finestra e dei tubi. Inoltre il trasformatore di PVC è già regolarmente impegnato al recupero in linea di una > congrua parte del prodotto. La società Solvay è inoltre promotore dell'iniziativa Vinyloop, ovvero la costruzione e l'avviamento di un impianto di riciclo meccanico tramite solventi scarti di PVC da cavi elettrici, foglie rigide, compositi automobile, per produrre nuovamente cavi, foglie calandrate, manti di impermeabilizzazione, tubi plastificati, guarnizioni, monofili, pannelli rigidi espansi, raccordi, particolari elettrici.....come chiamiamo tutto ciò, se non riciclabilità ?

2) Il PVC è riciclabile chimicamente, è questa una nuova recente fase di sviluppo in via di approfondimento

3) Il PVC si può incenerire, recuperando energia!!! L'aspetto della formazione di diossine è stato dibattuto e approfondito sotto ogni punto di vista e da molto tempo; ricordo la ricerca "Bruciare o riciclare", di Aurelio Misiti, ordinario di impianti di potabilizzazione e trattamento all'università di Roma La Sapienza e allora presidente dell'ACEA di Roma, presentata nel corso di un seminario di Lega Ambiente già nel lontano 1986,

Difendo il PVC perchè lo conosco, perchè è duttile, polivalente, igienico, sicuro, economico e RICICLABILE.



Message from Steven Phillips:

I am an employee of Occidental Chemical Corporation , a manufacturer of PVC resin in North America, and I am concerned about the potential impact of the European Union's actions on international trade, my company's business, our customers' business and my job. I am also grateful for the opportunity to comment on the European Commission Green Paper.

No specific regulatory measures are necessary with respect to mechanical recycling of lead- and cadmium-containing PVC waste. If such material is to be recycled, a closed loop system--that is, recycling articles into similar articles--should take priority. Heavy metals in PVC applications are integrated in the plastic matrix, and present no unusual risk.

PVC is a modern material. Resin, additive and product technology is improving continuously. Fabrication companies are also investing in the exploration of potential alternatives, as has always been done for any material; however, alternatives should be favored only if a complete comparative analysis demonstrates that they are better than PVC. More generally, the European industry, through its Voluntary Commitment is working to address the substantive issues outlined in the Green Paper. This is a progressive approach to environmental concerns, and should be the basis for European policy on PVC.

Thank you,  
Dr. Steven Phillips

Message from Stiven Diaz :

Gentili signori, io sono A FAVORE DEL PVC, perchè:

- 1) Fa risparmiare petrolio
- 2) E' versatile
- 3) E' ecologico (pellicce sintetiche = no uccidere animali finte pelli = no conciatura pelli  
packaging ermetico = no deperimento derrate alimentari nei paesi poveri leggerezza  
packaging = risparmio carburanti foglie e carte di credito = risparmio carta e alberi)
- 4) Dà lavoro a tanti miei amici e a me
- 5) E' autoestinguente

Vorrei concludere con un appello:

**NO ALLE SCELTE EMOZIONALI, SI ALLE SCELTE DI SVILUPPO  
COMPATIBILE E SOSTENIBILE, NO ALL'ABBANDONO DELLA STRADA  
"VECCHIA" MA SICURA E STUDIATA PER SCELTE DI BREVE RESPIRO.**

Grazie.

## Message from Tarkett Sommer Espana :

Muy Sr. Nuestro.

Deseamos comunicarles nuestra satisfacción al conocer la iniciativa tomada por la Unión Europea, con el fin de integrar las posiciones en referencia a los procesos industriales del tratamiento del plástico dentro del proceso de decisiones sobre el PVC.

A lo largo de los últimos años la industria del PVC ha mejorado de manera permanente sus procesos de producción, teniendo en cuenta los aspectos ecológicos y creando un entorno gracias al cual la producción de suelos vinílicos es hoy en día un proceso ecológicamente aceptable.

TARKETT SOMMER ha mostrado a lo largo de los años, un fuerte compromiso en referencia al reciclaje de los suelos de PVC. En la primavera de 1.990, nuestra empresa, junto con otros 20 fabricantes de PVC, así como Compañías de suelos de PVC, creó el AGPR, Grupo de Investigación de Reciclaje de PVC, con el fin de desarrollar un sistema de evacuación y reciclado del PVC a gran escala e Alemania. A mediados de los años 90 TARKETT SOMMER ya utilizaba en su ciclo de producción más de 8000 Toneladas anuales de material reciclado de PVC, contribuyendo activamente a la protección del Medio Ambiente.

Actualmente TARKETT SOMMER recicla más de 35.000 Toneladas anuales de PVC.

Teniendo en cuenta nuestros amplios conocimientos y experiencia en referencia a la fabricación de Revestimientos de Suelos . con un objetivo claro de respeto al Medio Ambiente, nos complace darles a conocer nuestra posición con respecto a las siguientes preguntas :

### 1. ESTABILIZANTES

TARKETT SOMMER no utiliza Cadmio ni estabilizantes de Plomo en sus producciones.

### 2. PLASTIFICANTES

TARKETT SOMMER apoya todo tipo de medidas que estén contra el uso de plastificantes en los que se haya demostrado científicamente la existencia de posibles riesgos. En el caso de que fuera necesario la toMa de determinadas medidas, nuestra empresa apoya una solución basada en el autocontrol voluntario, dado que ha resultado ser el método más eficaz en industrias con similares exigencias.

En cualquier caso, TARKETT SOMMER ha introducido a lo largo de los últimos años muchas medidas con el fin de reducir el uso de algunos plastificantes.

### 3. PLAN DE ACCION

TARKETT SOMMER apoya una política de reciclaje definida por sección y no por material. A este respecto, hemos iniciado varios proyectos en los países escandinavos y Alemania que incluyen la recogida y reciclaje de los desechos de instalación. En lo que a nuestra amplia experiencia en la industria del reciclaje mecánico se refiere (ver también nuestra planta AGPR en Troisdorf) pensamos que los mayores problemas son los siguientes :

La recogida en grandes cantidades de materiales después de su consumo, conlleva una serie de problemas de organización , y también económicos en el proceso de reciclaje que la industrias sólo, no ha podido solucionar y no puede solucionar de manera independiente. Dada la actual situación, la recogida y el reprocesamiento de los materiales usados son más costosos que la producción de revestimientos utilizando materias primas nuevas. En todos los casos, TARKETT SOMMER se compromete al reciclado de los materiales usados.

Recomendamos la introducción de una tasa en todos los productos plásticos, que sería compartida entre todos los interesados, lo que permitiría la creación de un sistema logístico económicamente viable a gran escala para la recogida de los materiales usados y conseguir de esta manera una importante expansión en el sistema de reciclado, debiendo de discutir todo ello a nivel político. Ello conllevaría que a nivel político debería fomentarse el reciclaje del plástico.

#### 4. RECICLAJE MECANICO

No consideramos necesario la creación de ningún especial requerimiento en referencia al reciclaje de desechos de materiales que contengan plomo o cadmio, dado que este tipo de sustancia se utilizan cada vez menos, y además representaría complicar de manera imposible el proceso normal de reciclado. Debemos de añadir que los metales pesados se integran sólidamente en la estructura de las sustancias diluyéndose en ellas y no creando prácticamente ningún impacto medio-ambiental.

#### 5. RECICLAJE QUIMICO

Actualmente TARKETT SOMMER está estudiando la construcción de una planta de reciclado químico conjuntamente con otras empresas productoras de PVC. Esta planta, con una capacidad de 10.000 Toneladas, constituye una prometedora solución para la separación química del PVC de otros productos. Deseamos fomentar un importante desarrollo en esta área, conjuntamente con asociaciones de importantes industrias del sector apoyando también una solución basada en el autocontrol voluntario.

#### 6. INCINERACION

Consideramos que la incineración de los desechos de PVC es el método más eficaz para su evacuación. La polución es evitada utilizando las tecnologías de vanguardia a la hora de quemar los desperdicios.

En referencia a ello, estimamos que no existe ninguna diferencia entre la incineración de PVC con respecto a otros productos.

## 7) MEDIDAS ESPECÍFICAS PARA EL PVC QUE SE ENCUENTRA EN VERTEDEROS

Tal y como Indicábamos en la anterior respuesta, consideramos que la evacuación de residuos utilizando el método de combustión o incineración es la mejor solución, tanto desde el punto de vista económico como ecológico.

## 8. ESTRATEGIA HORIZONTAL

Como en años anteriores, la industria del PVC continuará con sus esfuerzos para optimizar la fabricación de sus productos, teniendo presente los aspectos ecológicos. Ello también incluye el reciclaje así como la búsqueda de soluciones adecuadas que puedan responder a cada problema. Consecuentemente, TARKETT SOMMER continúa su política de respeto al Medio Ambiente en referencia a fabricación y suministros de PVC .

Esperamos y confiamos en que las propuestas que les hemos planteado sean de interés de cara a la toma de decisiones en esta Comisión.

Sin otro particular, les saludamos muy atentamente,

Enrique BRETOS  
Director General de TARKETT SOMMER ESPAÑA

Message from Tarkett Sommer France :

Mr Schulte-Braucks Mr Krämer

Nous sommes heureux d'apprendre l'initiative prise par l'UE de prendre en compte l'opinion de l'industrie des transformateurs de plastique dans le processus de décision sur le PVC.

Durant ces dernières années, l'industrie du PVC a sans cesse amélioré sa production en prenant en considération les aspects écologiques et a créé un environnement dans lequel la production de revêtements PVC se fait d'une manière acceptable.

Tarkett Sommer s'est beaucoup impliquée dans le recyclage de ses produits PVC. Au printemps 1990, notre société, avec les 20 autres producteurs de PVC et les sociétés de revêtements de sols PVC, a créé l'AGPR, un groupe d'étude du recyclage du PVC, afin d'implanter un système de déchet et de recyclage à grande échelle en Allemagne. Dès le milieu des années 90, Tarkett Sommer a canalisé plus de 8.000 tonnes de PVC recyclé dans le cycle de production chaque année, apportant ainsi une grande contribution à la protection de l'environnement. Aujourd'hui, Tarkett Sommer recycle plus de 35.000 tonnes de PVC par an.

Dans le cadre de notre longue expérience de protection de l'environnement dans la production de revêtements de sols et notre implication dans le domaine du recyclage, notre position quant aux questions posées est la suivante :

**Question 1 : Stabilisants**

Tarkett Sommer n'utilise pas de cadmium or de stabilisants en plomb dans sa production bien que l'utilisation des sels de plomb n'ait pas été démontrée comme nocive à ce jour.

**Question 2 : Plastifiants**

Tarkett Sommer apporte son support aux mesures contre l'utilisation de plastifiants quand il est prouvé scientifiquement qu'il y a un risque potentiel. Si de telles mesures devaient devenir nécessaires, la société supporterait une solution basée sur un contrôle volontaire. C'est devenu la méthode la plus efficace dans d'autres industries. Tarkett Sommer a elle-même déjà introduit de nombreuses mesures ces dernières années afin de réduire l'utilisation de certains plastifiants.

### **Question 3 : Plan d'action**

Tarkett Sommer suit une politique de recyclage définie par famille et non par matière. Dans ce sens, Tarkett Sommer a déjà commencé en Scandinavie et en Allemagne quelques projets qui comprennent la collecte le recyclage des déchets de pose. Dans le domaine du recyclage mécanique (voir aussi l'usine AGPR à Troisdorf), nous voyons le problème comme suit : la collecte à grande échelle des produits en fin de vie conduit à des problèmes organisationnels et économiques dans le processus de recyclage qui n'ont pas encore été résolus et qui ne peuvent pas être résolus par la seule Industrie. Vue la situation présente, la collecte et le recyclage des matières usées est plus coûteuse que la production de revêtements utilisant des matières nouvelles. Bien sûr, Tarkett Sommer doit recycler la matière qui a été collectée.

Dans ce contexte, Tarkett Sommer recommande l'introduction d'une cotisation sur tous les produits plastiques qui serait partagée entre les acteurs de la chaîne de recyclage. Elle permettra l'introduction d'un système logistique financier à grande échelle pour la collecte des matières en fin de vie et ainsi une expansion remarquable du système de recyclage. Ceci nécessite une implication des pouvoirs publics. Ceci inclut par le niveau politique la promotion de l'utilisation des produits recyclés auprès des consommateurs, y compris pour les chantiers des collectivités.

### **Question 4 : Recyclage mécanique**

Nous n'avons pas d'exigence spéciale pour le recyclage de matière contenant du plomb ou du cadmium. La proportion de ces matières diminue constamment. De plus, le recyclage normal deviendrait plus compliqué de façon inacceptable, voire impossible. Enfin, les métaux lourds sont solidement intégrés dans la structure de la substance, c'est-à-dire qu'une dissolution et l'impact environnemental correspondant ne posent pas de problèmes.

### **Question 5 : Recyclage chimique**

Actuellement, Tarkett Sommer est en discussion avec les autres sociétés produisant du PVC sur la construction d'une grande usine pour le recyclage chimique. Cette usine d'une capacité de 10.000 tonnes constitue une méthode prometteuse pour la séparation chimique du PVC des autres produits. En coopération avec les associations industrielles concernées, la société veut promouvoir un développement dans ce domaine. Là aussi, la société préconise une solution basée sur le contrôle volontaire.

### **Question 6 : Incinération**

Nous pensons que l'incinération des déchets PVC est la méthode la plus efficace, utilisant l'état de l'Art des technologies de combustion des déchets en évitant la pollution. Dans ce sens, nous ne faisons pas de différence entre le PVC et les autres produits. Cela demande sans doute de retraiter les déchets de l'incinération.

### **Question 7 : Mesures spécifiques pour le PVC déposé dans les décharges**

Nous nous référons à la question 6 et souhaitons répéter qu'une méthode de combustion des déchets est la meilleure solution tant sur le plan économique qu'écologique. Néanmoins, nous sommes opposés à des mesures spécifiques au PVC concernant la mise en décharge. Rappelons que les membranes d'étanchéité des décharges sont en PVC.

### **Question 8 : Stratégie horizontale**

Comme dans les années passées, l'industrie du PVC continuera ses efforts pour optimiser la fabrication de ses produits en tenant compte des aspects écologiques. Ceci inclut le recyclage, la recherche scientifique des problèmes possibles et les solutions appropriées. Dans ce contexte, Tarkett Sommer continue sa politique de préservation de l'environnement pour ses produits contenant du PVC sur la totalité de leur cycle de vie. Des substitutions ne sont intéressantes que si elles sont plus performantes en développement durable, plus sûres et réalistes économiquement.

Nous espérons que les propositions faites ci-dessus pourront être utilisées de manière productive dans le processus de décision de la Commission.

Veillez croire, Messieurs, en l'assurance de nos salutations les meilleures.

Bruno Ribault  
Président Directeur Général



Message from Tarkett Sommer AG, Frankenthal:

Sehr geehrte Damen und Herren,

der Gesamtbetriebsrat der Tarkett Sommer AG Deutschland unterstützt die nachstehenden Vorschläge und Positionen zum gegenwärtigen Meinungsbildungsprozess innerhalb der PVC-Diskussion.

Eine Veränderung der Rahmenbedingen im Bezug auf Herstellung,Vertrieb sowie das Recycling von PVC-haltigen Produkten ist aus unserer Sicht nur im Konsens zu sehen und umzusetzen.

Auch beschäftigungspolitisch sehen wir grosse Probleme bei einer übereilten Änderung der Rahmenbedingungen, welche auch die Arbeit der Interessenvertretungen der Arbeitnehmern vor eine noch schwierigere Aufgabe stellen würde.

Auf einen auch für die Arbeitnehmerseite sich positiv entwickelnden Meinungsprozess hoffend verbleiben wir,

mit freundlichen Grüßen

Der Gesamtbetriebsrat der Tarkett Sommer AG Frankenthal

-----  
wir begrüßen die Initiative der EU, im Rahmen der Diskussion zum Thema PVC die Positionen der kunststoffverarbeitenden Industrie in den Meinungsbildungsprozess einzubeziehen.

Die PVC-Industrie hat in den letzten Jahren ihre Produktion unter Umweltaspektenm kontinuierlich optimiert und Bedingungen geschaffen, unter denen eine umweltgerechte Herstellung von PVC-haltigen Produkten weitestgehend Tatsache ist.

Die Tarkett Sommer AG hat sich speziell im Bereich des PVC-Fußbodenbelags-Recyclings engagiert. Unser Unternehmen hat zusammen mit 20 PVC-Produzenten und PVC-Fußbodenproduzenten die AGPR im Frühjahr 1990 gegründet, um PVC-Altbeläge großflächig in Deutschland zu entsorgen und dem Recycling zuzuführen. Bereits Mitte der 90er Jahre hat Tarkett Sommer AG mehr als 8000 Tonnen PVC-Recycling-Material pro Jahr in den Produktionskreislauf zurückgeführt und damit einen wichtigen Beitrag zum aktiven Umweltschutz geleistet. Heute recycelt Tarkett Sommer mehr als 35 000 Tonnen PVC-Material pro Jahr.

Vor dem Hintergrund unserer langjährigen Erfahrung im umweltschonenden Umgang bei der Produktion von Fußböden sowie des oben erwähnten Engagements im Bereich des Recyclings vertreten wir folgende Positionen zu den von Ihnen gestellten Fragen:

Frage1: Stabilisatoren

Die Tarkett Sommer AG verwendet bei der Produktion weder Cadium- noch Blei-Stabilisatoren.

Frage 2: Weichmacher

Die Tarkett Sommer AG befürwortet Maßnahmen zum Umgang mit Weichmachern erst zu dem Zeitpunkt, an dem wissenschaftlich zweifelsfreie Ergebnisse über ein mögliches Risikopotential dieser Stoffe möglich sind. Falls entsprechende Maßnahmen dann notwendig sein sollten, befürwortet das Unternehmen dann entsprechende Selbstverpflichtungen auf freiwilliger Basis. Diese haben sich wie auch in anderen Branchen als der erfolgversprechenste Weg erwiesen.

Frage 3: Maßnahmenkatalog

Tarkett Sommer AG befürwortet eine Recycling-Politik, die branchenspezifisch und nicht materialspezifisch definiert wird. Wir verweisen gerade vor dem Hintergrund unserer langjährigen Erfahrung im Sektor des mechanischen Recycling (s. a. AGPR-Anlage in Troisdorf) auf das Hauptproblem aus unserer Sicht: Die großflächige Sammlung von Post-Consumer –Materialien bedeutet bisher nicht gelöste organisatorische und in der Konsequenz auch ökonomische Probleme im Recycling-Prozess. Sammlung und Aufbereitung von

Altmaterial ist unter den derzeitigen Bedingungen kostenintensiver als die Produktion von Fußböden aus neuen Rohstoffen.

Die Tarkett Sommer AG empfiehlt vor diesem Hintergrund die Diskussion einer Gebühr auf politischer Ebene, die erst die Einführung eines finanzierbaren flächendeckenden Logistiksystems für die Sammlung von Post-Consumer-Materialien und damit den spürbaren Ausbau des Recycling-Systems ermöglicht.

#### Frage 4: Mechanisches Recycling

Wir befürworten keine speziellen Bedingungen für das werkstoffliche Recycling hinsichtlich blei- und cadmiumhaltigen Abfalls. Die Anteile der genannten Stoffe nehmen tendenziell ab. Zudem würde das generelle Recycling in nicht vertretbarer Form verkompliziert bzw. unmöglich. Schwermetalle sind zudem in der Stoffmatrix fest integriert, d.h. eine Lösung und entsprechende Umweltbelastung scheidet aus.

#### Frage 5: Chemisches Recycling

Die Tarkett Sommer AG hat im Verbund mit anderen PVC-Verarbeitern diskutiert derzeit den Bau einer großdimensionierten Anlage für das chemische Recycling. Diese Anlage mit einer Kapazität von 10.000 Tonnen ist ein vielversprechendes Verfahren, PVC auf chemischer Basis von anderen Produkten zu trennen. Das Unternehmen will zusammen mit den entsprechenden Branchenverbänden entsprechend die Entwicklung in diesem Bereich vorantreiben. Auch hier befürworten wir grundsätzlich freiwillige Selbstverpflichtungen als effektivsten Weg.

#### Frage 6: Verbrennung

Wir befürworten grundsätzlich die Verbrennung von PVC-Abfällen als den effektivsten Weg der Entsorgung. Hier sehen wir auch keinen prinzipiellen Unterschied in der Behandlung zwischen PVC und anderen Produkten.

#### Frage 7: Spezielle Maßnahmen bei Deponie PVC

Wir verweisen hier auf Frage 6 und betonen noch einmal, dass die Entsorgung über Verbrennung sowohl ökonomisch wie auch umwelttechnisch der beste Lösungsweg ist.

#### Frage 8: Horizontale Strategie

Wie schon in den letzten Jahren wird die PVC-Industrie auch in Zukunft an einer Optimierung der Herstellung ihrer Produkte unter Umweltgesichtspunkten arbeiten. Dies beinhaltet auch den Aspekt des Recycling-Bereichs wie auch die wissenschaftliche Bewertung möglicher Problemfelder und entsprechende Suche nach Lösungen.

Wir hoffen, mit unseren Vorschlägen und Positionen einen produktiven Beitrag zum gegenwärtigen Meinungsbildungsprozess innerhalb der PVC-Diskussion zu leisten.