



A Division of The Society of The Plastics Industry, Inc.

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8-28-91

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Executive Director

July 26, 1991

TO: Vinyl Institute Executive Board Members
Vinyl Institute Communications Committee

RE: "PVC and the Environment -- A European Overview"

Harold Clayton, Senior Environmental Advisor for Hydro Polymers, Ltd. in England, whom I have known for many years, visited the Vinyl Institute on July 22. He was in the States visiting a number of companies and had presented a paper at the SPI Vinyl Formulators Division Annual Meeting last week entitled "PVC and the Environment -- A European Overview".

A copy of that paper is enclosed for your information. It is quick reading and gives the view of someone very close to the European situation. I believe that the sections on the origins of the environmental debate in Europe, the lessons to be learned and the positive steps to be taken will be of interest to you.

Please feel free to circulate this to others in your organization having an interest in environmental issues affecting the vinyl industry.

Roy

cc: Dave Meeker, Edward Howard Company

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PVC AND THE ENVIRONMENT

A EUROPEAN OVERVIEW

INTRODUCTION

Before entering into the detail of my presentation I would first like to consider what is meant by the word environment.

The second edition of Webster's "New International Dictionary of the English Language" defines Environment as follows:-

Environment - Act of environing, state of being environed.

under Environ we find:

Environ - to go round as in a circle.

Passengers on a carrousel or merry-go-round go round as in a circle. If it proceeds too fast or noisily, they (the passengers) are disoriented, confused and frightened. Life is sometimes compared with a journey on a merry-go-round.

The competing political and commercial claims for "environmental concern" and "environmental friendliness" of products and policies are confusing and the above definition is very topical.

The definition that I personally like best was given some two or more years ago at a seminar in London.

"All that which is not myself".

If we think about that definition it clearly implies that every action by living creatures human or otherwise has some effect on the environment.

Our very existence produces waste products.

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When we breathe carbon dioxide is produced. The proper disposal of the waste products of our digestive systems has become a major management problem in densely populated parts of the world.

ORIGINS OF THE DEBATE ABOUT PVC AND THE ENVIRONMENT

The origins of the debate about the impact of PVC on the environment are part theological, part political and to a smaller extent technical.

A number of vested interests ensure that the debate is kept going. Amongst those vested interests are business managers handling competing products; academics researching environmental issues; suppliers of advanced analytical equipment; suppliers of equipment to handle alternative products; "green" pundits and consultants; the media trying to find new angles and headlines; manufacturers and retailers cashing in on "green" marketing; politicians; and of course pressure groups looking for simple good causes.

THE THEOLOGICAL DIMENSION

A colleague present at the Dioxins 90 conference, held in Bayreuth, tells me that one of the opening speakers claimed that God had created 91 of the 92 naturally occurring elements. The 92nd - chlorine - had been created by the Devil himself. That view expresses in somewhat stark form, a view of chlorine chemistry widespread in German speaking Europe as well as parts of Scandinavia. A former Austrian Minister of the Environment for example called for the creation of a chlorine-free society.

Allied to the above perception of chlorine chemistry is a belief that present day consumer society is a fall from grace.

Instead of simple older values society is driven by greed created by multinational companies. The chemical industry is seen to be at the core of present day society.

Striking at the chloralkali industry whose products pervade society is perceived as a way of returning to an older morality. PVC is of course the largest single outlet for chlorine.

THE POLITICAL DIMENSION

Concerns about waste, pollution and depletion of natural resources are at the top of the political agenda. For many citizens, these concerns are focused on the disposal of domestic waste whose increasing difficulty and cost is a major political problem. As you all will be aware, the increasing use of lightweight, very attractive plastics packaging is perceived to be the root of the problem. Moreover, the attractiveness of such packaging reinforces the belief that significant resources are being unnecessarily squandered. Clear rigid PVC packaging is very visible in the domestic waste of most European Countries where nearly a million tonnes is used during a year. It is not surprising that environmental pressure groups have initially targeted all plastics packaging and PVC in particular as the source of our ills.

Much of Europe at national or local level is governed by coalitions many of which have small majorities or even are in a minority. Under such circumstances the pressure groups and Green parties have an influence which far outweighs their numerical support. Plastics, especially plastic packaging provide convenient targets which can be presented as "successes" without too great an impact on national economies or citizens' life-styles. "Success" in one country encourages similar actions in others.

The drive to a Single European Market threatens the dominant position of local suppliers in some countries. A good example is the brewing industry. In Germany, Austria and Denmark for example the use of returnable glass beer bottles protects the local brewers from significant competition. In Denmark the brewers also own the glass bottle manufacturers.

Local politicians claim environmental virtue when attempting to legislate against one way systems whether used on plastics, metal or laminates, in order to retain locally manufactured reusable glass bottles. Indeed in Switzerland the justification for moves against PVC bottles includes the observation that reductions in PVC usage in Switzerland have been negated by increased imports of products bottled in PVC.

THE TECHNICAL DIMENSION

Western Europe in common with most of the industrialised world has a general waste disposal problem which is particularly acute when municipal solid waste (MSW) is considered.

An average of 30% of MSW is incinerated, the remainder being landfilled. Average numbers conceal enormous national variations. Switzerland and Denmark incinerate more than 80% of all MSW, usually with energy recovery. In the UK the proportion is less than 10%.

As landfill sites fill up, most governments recognise that more incinerators must be built.

Past lax standards both for the operation of incinerators and landfills have led to deep distrust of both techniques by the general public, particularly incineration.

New national or EC standards will require immense expenditures by the authorities to put matters right - for example even in Denmark a country generally regarded in the vanguard of the environmental movement only one of more than 40 MSW incinerators currently meets the stringent new standards.

The new standards require drastic reductions in hydrogen chloride and dioxins emissions. PVC providing more than half the chlorine load of MSW is a tempting scape-goat by politicians and others. The fact that one tonne of incinerated PVC results in one tonne of a contaminated salt provides additional ammunition. Moreover, all plastics with their relatively high calorific value are a mixed blessing in MSW incinerators. Whilst a minimum presence is necessary to ensure MSW can be incinerated without extra fuel being added, their increasing presence is raising the calorific value of MSW beyond the design parameters of many incinerators. The result in countries such as Switzerland is that the MSW throughput must be reduced to stay within the maximum allowable thermal load. In landfills the presence of heavy metal stabilizers in PVC waste raises worries about long term leaching behaviour. This is often cited as the reason for attempts to restrict the use of PVC in building and construction applications.

The additional costs whether incineration or landfill have increased the pressure for recycling. PVC is perceived as being difficult if not impossible to recycle. Its presence undoubtedly can hamper the recycling of PET. None of the concerns about PVC in MSW treatment are supported by scientific evidence.

Indeed the presence of PVC in MSW undergoing incineration may well have an economic benefit in future. The presence of heavy metal compounds from numerous sources on fly ash causes problems during disposal and a number of processes are under development to remove the undesirables. The best known is the 3-R Process, which uses the hydrogen chloride released during incineration to extract heavy metals from flyash. Without PVC present, additional hydrochloric would have to be employed.

When it comes to recycling, PVC is particularly suited since it is relatively tolerant of inevitable cross contamination from other components of MSW. A range of applications exist for recovered PVC of differing degrees of purity ranging from sewer pipe for the least contaminated through to wood and concrete substitutes commingled with other plastics. Thus a relatively well-defined packaging waste stream can be converted with what are mainly building and construction applications of long life. Solvay who pioneered the sewer pipe development have identified a market in former West Germany alone of 870,000 pipe - Km. Recycled PVC can be used to renovate worn out sewer systems based on traditional materials. Thus the recycled PVC will not even disturb traditional markets for virgin PVC.

Building and construction application, representing the majority of PVC uses normally involve the use of PVC in large well defined objects/sections. Their recovery when renovation or demolition of buildings occurs should not present any major problems since well developed salvage industries already exist in most European countries or will be required by EC legislation. A number of recovery/recycling schemes are already in place covering for example window frames and pipe.

LESSONS TO BE LEARNED FROM THE CURRENT SITUATION

PVC is an extremely resource efficient plastic with low energy consumption and nearly sixty percent of its composition based on common salt, a product available in almost unlimited quantities. As a packaging material, it is considered by the leading Swiss retailer Migros as nec plus ultra - nothing better. Replacing PVC packaging with alternatives leads to increased use of resources and/or greater quantities of waste. PVC pipe was the first water pipe material with a guaranteed life. Of the common thermoplastics it is in many ways one of the easiest to recycle because of its relative tolerance of cross contamination and the existence of a range of applications tolerating different levels of contamination.

In building and construction application its fire resistant properties are outstanding and life saving.

For many disposable medical applications its performance is superior to all competitive products.

So why is this truly remarkable and versatile polymer under such pressure in some European countries with attempts in some cases to eliminate or severely limit all uses? Can we draw any lessons from the European experience?

The first reason for the attacks is due to the sheer success of all plastics including PVC. PVC in particular, on account of its incredible versatility, has invaded virtually every market held by traditional materials. The PVC industry has consequently made many enemies.

Allied to the penetration of so many markets by PVC was a selling strategy emphasising cheapness. "Cheap" can rapidly be associated with "nasty". The image of some earlier less than completed satisfactory applications is still with us - like for example automotive seats covered in PVC or shower curtains containing volatile plasticisers.

The second reason is that in the heyday of rapid market expansion during the 1960's with annual increases of 10-20% not uncommon, business managers became complacent and failed to notice what was happening around them. For example in the UK Friends of the Earth dumped one-way glass bottles on the doorsteps of Cadbury-Schweppes at a time when plastics bottles were beginning to make dramatic inroads into the bottle market. The glass bottle industry with its back to the wall thought through a long term strategy which in many countries took account of the interests of some of its most important customers e.g. the brewers. The plastics industry ignored what was happening.

Perhaps the greatest mistakes were made in Germany.

Some years ago a German acquaintance whom I met regularly at meetings in Brussels advised me that the only way to deal with the Green pressure groups was to ignore them and explain the facts to the civil servants of the appropriate ministry. When I asked what would happen if the civil servants agreed or sympathised with the pressure groups, he could not understand the question.

So mistake No 1 was to try and treat a political problem as if it were a technical issue.

Mistake No 2 was secrecy. When I first started attending meetings in Brussels as part of a multinational working party concerned with embryonic European, i.e. EC legislation for food packaging, I was amazed to find that all the German members argued very powerfully for releasing as little information as possible to the authorities in case it was used against industry. At that time Germany had a dominant influence in such working parties and consequently such views prevailed.

The result was bad legislation emerged based both on ignorance and suspicion of a secretive industry.

Mistake No 3 was to try and turn issues with somebody else's problem. For many years the position of German industry was that disposal of plastics waste was not a problem. All that was necessary was to incinerate it in plants provided by the tax payer. This was also the official position of the European plastics industry for many years.

In Germany the situation was exacerbated by the organisation of industry. Raw material suppliers had one representative body, (the VKE) and the convertors another. The view of suppliers and the VKE was that disposal was a problem for their customers the convertors and their customers.

Such a situation delayed tackling a common problem.

Germany has the largest population and most powerful economy in Europe. German views carry considerable weight particularly in a number of smaller countries "next door" to Germany such as Austria, Switzerland, Denmark and the Netherlands. German mistakes become European mistakes.

Now returning to Europe as a whole.

Initially individual companies and trade associations in many countries reacted in what can only be described in an unprofessional manner.

Early publications were poorly researched. Extravagant claims were made. Communications between different countries were poor. A "we know best" attitude could be observed from some of the bigger companies. Worst of all - a crime in fact - was the use of environmental knocking copy to promote competing products which has damaged the general image of the entire plastics industry. A good example of this comes from the UK.

Some 6 years ago a company launched a polyethylene cling film to compete with PVC. A well prepared campaign ensured that the press, TV and Radio and above all journals and magazines aimed at housewives spread the message that the use of PVC cling film was harmful to the environment and could cause cancer. One company selling PVDC film also marketed its product in such a way as to suggest it was safer than PVC.

The controversy unleashed made the UK Ministry of Agriculture, Fisheries and Food (MAFF) realise that there were other potential areas of controversy with unpleasant political implications and set-up a working party on chemical contaminants in foodstuffs to provide advice, collect data and recommend research priorities. I am a member of the main working party and one of its subgroups.

At the time I predicted that the use of all plastics in food contact would come under suspicion. I also advised contacts in the company marketing PVDC film that the methods used could rebound on them.

In November last year just before Mrs Thatcher resigned, there was a UK Government report which caused uproar. In spite of EC regulations which permit all three products it criticised PVC, polyethylene and PVDC. Echoes of that report have crossed the Atlantic. The company that started the knocking campaign against PVC cling has undermined public confidence in three very good plastics packaging materials, caused government panic and I believe will lead to further UK Government reports questioning the safety of some other plastics packaging systems. These in turn will have international repercussions. The well established PVC based medical device business of another division of that same company was badly affected. Even the packaging division which started the scare has fared badly and has been taken over by another company.

Let the above story serve as an awful warning to all business managers who are tempted to knock other products on environmental or safety grounds!

Any attempt to gain short term commercial advantage by such tactics will inevitably cause permanent damage to the total industry.

My final example of mistakes which have been made in Europe has occurred in a number of countries. This is the so-called voluntary agreement to restrict the use of PVC. Governments are well aware that outright bans on the use of PVC have at the most, dubious legality. In a number of countries government pressure has led either the local plastics federation or the local manufacturers and users of PVC to enter into agreements to reduce or freeze the use of PVC particularly in shortlife applications. The so-called voluntary agreements were entered into with the hope that there would be no more pressure. The result was quite the contrary.

Such agreements simply increased the appetites of the opponents of the PVC industry. Don't ever be fooled into such folly!

POSITIVE STEPS THAT CAN BE TAKEN

You have had a brief expose of some of the mistakes made in Europe. Let me now give my views on what can be done in a positive, constructive manner to reduce the hassle to manageable levels.

- 1 Be prepared for ongoing debate and dialogue. The days are long since gone when the majority of the population worked in factories and knew that benefits of industry were always accompanied by some inconveniences to the environment.
- 2 Take a proactive stance, not a defensive one. However, make sure that you understand the advantages and disadvantages of your products in environmental terms compared with the alternatives - remember the second definition of 'Environment' that I quoted at the beginning of this presentation.
- 3 Make a company commitment of resources - manpower and funds to fight the good fight - and make sure that the top man in the company takes a personal interest in and understands the environmental issues involved.
- 4 There is strength in numbers. Support existing organisations such as the SPI or Vinyl Institute. If you are dissatisfied with what they are doing, change things.

- 5 Use the expertise that is available from your suppliers.
- 6 Remember every employee can be an ambassador - make sure that the entire workforce understands what the issues are.
- 7 Make sure that you have a formalised route for dealing with media enquiries and allegations. In some cases a hotline system of individuals in groups of companies together with an industry organisation is a good way of heading off damaging media coverage. In the UK for example for major fires which may involve plastics, there is a small group of individuals who can be reached on the phone by the British Plastics Federation to ensure that there is an appropriate initial industry response.
- 8 A policy of openness pays. A few years ago a radical pressure group in Norway called Bellona broke into several of the sites operated by Norsk Hydro and removed various samples. Subsequently, with much publicity the awful truth was revealed. The Norsk Hydro main board agonised on how to respond. In the end a decision was taken to publish a very detailed Environmental Report which listed all the environmental sins and virtues at every one of the Norsk Hydro Norwegian Sites. Local communities became aware of the balance of what had to be done to improve the operations and the jobs at stake. Local management was put under pressure to improve its performance. Ultimately Bellona and Norsk Hydro were able to sit round a table and discuss matters in a reasonable manner. One outcome of that process is that Bellona is supporting a proposed new PVC plant at Rafnes and in an analysis of the PVC industry concludes:-

"A generally reduced use of PVC plastics will, given today's circumstances, lead to a worsening of the environmental situation".

Encouraged by the Norwegian experience Norsk Hydro UK published an Environmental Report in 1990 which was based on an independent audit by Lloyds' Register.

The ensuing favourable media coverage of the report has led to an approach by the BBC to produce a programme the series Tomorrows World about the Norsk Hydro UK PVC operations with the theme of how the PVC industry is continuously improving its environmental performance.

A number of Divisional Heads who originally were opposed to the idea of a public environmental audit now concede that their opposition was mistaken.

CONCLUDING REMARKS

Some damage has been done in the smaller European PVC markets by pressure from Governments to restrict its use. Those Governments have in general been unstable coalition governments responding to militant environmental pressure groups. Overall however the position of PVC is good with growth even in the most contested market - packaging.

However, future growth of all plastics including PVC will be effected by national and EC requirements both for significant recycling rates and an overall reduction in the use of all types of packaging. One consequence will be even greater competition between competing materials and the increased danger of unscrupulous environmental marketing.