Vinyl 2010
Progress Report 2007

Report on the activities
of the previous year

VINYL 2010

The European PVC Industry's Sustainability Programme

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EXECUTIVE SUMMARY

The Progress Report, the Voluntary Commitment and Vinyl 2010

The Progress Report is Vinyl 2010's annual review of progress towards the targets set out in the Voluntary Commitment of the European PVC industry. The Voluntary Commitment was signed in 2000 and reviewed in the Midterm Review of 2005. It is a 10-year Sustainable Development Initiative involving the whole life-cycle of PVC, from production to disposal. Vinyl 2010 is the structure which organises and implements this Commitment.

Developments in 2006

Vinyl 2010 continued on the road of strong progress towards meeting its targets. After doubling PVC waste collection in 2005, the 2006 collection figures through all of the Vinyl 2010 projects exceeded expectations with a further doubling.

Now in its seventh year, Vinyl 2010 has gained a wealth of experience of the self-regulatory approach and in promoting involvement throughout the value chain of PVC. Committed as ever to Sustainable Development, the PVC industry has continued to support innovative ways to produce, collect and recycle PVC, dedicating time and resources to reducing the environmental impact of PVC as well as supporting the life-cycle approach and stakeholder dialogue.

Resin Manufacturing
The European Union's Integrated Pollution Prevention and Control (IPPC) Directive 96/61/EC lays down a legal framework requiring Member States to issue operating permits for certain installations carrying on industrial activities, based among others on EU guidance documents called BREFs. The PVC industry contributed significantly to the final version of the Polymers BREF (Reference Document on Best Available Techniques in the Production of Polymers) that was published in October 2006.

Eco-Profile and Environmental Declaration (ED)
Vinyl 2010 practices the life-cycle approach, a cradle-to-grave analysis of environmental impact. An updated Eco-Profile for PVC was developed with the assistance of Vinyl 2010. The next step in 2007 is to develop an Environmental Declaration or ED for suspension PVC (S-PVC) and emulsion PVC (E-PVC). Environmental Declarations will provide a useful and verified resource for studies and research.

Plasticisers
The EU risk assessments on the most commonly-used phthalate plasticisers were officially published in the EU Official Journal in April 2006. The review of diisononyl phthalate (DINP) and diisodecyl phthalate (DIDP) showed that they do not pose any risk to human health or the environment in any of their current applications. The risk assessment for dibutyl phthalate (DBP) showed some risk to plants in the vicinity of processing sites and to workers through inhalation and simple measures can be implemented to counter this. A further risk assessment of di(2-ethylhexyl) phthalate (DEHP) is expected to be published in 2007.

Stabilisers
Vinyl 2010 member ESPA (the European Stabiliser Producers Association) continued with their commitment to phase out lead stabilisers, achieving their interim targets for lead replacement. This phase-out will be extended to the EU-25. Increasingly, calcium-based stabilisers are replacing the use of lead stabilisers.

Waste Management Projects
The sector projects of EuPC (European Plastics Converters) advanced well in 2006.
Some highlights from the waste management projects were:

- Recovinyl collected 44,690 tonnes in Belgium, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden and the UK, expanding its network of collection points. This very good result also reflected integration of sector projects of TEPPFA and EPPA in the Recovinyl model, which works through the collection and recycling of PVC waste using existing facilities.
- TEPPFA (the European Plastic Pipes and Fittings Association) phased out lead stabilisers in drinking water pipes, except in Greece, Portugal and Spain.
- TEPPFA increased post-consumer pipes and fittings recycling by 23% to 10,841 tonnes.
- EPPA (the European PVC Window and Related Building Products Association) achieved its 2006 targets by recycling 37,066 tonnes of post-consumer PVC window frames in Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands and the UK.
- Roofcollect increased significantly its recycling by extending its activities to non-roofing flexible PVC sheets. Recycling reached 10,504 tonnes.
- EPCOAT (EuPC's PVC Coated Fabrics) saw a recycled tonnage increase from 1,346 tonnes in 2005 to 2,804 tonnes in 2006.

Recycling Technologies and Trial Plants
Vinyloop® is a mechanical recycling technology based on separation by the use of solvents, operating in a plant at Ferrara, Italy. In 2006, technological improvements were made to improve the quality of the recycled PVC, including the installation of a new decanter centrifuge.

The trial phase of the Halosep® project to make use of flue gas residues was concluded in the third quarter of 2006.

The Redop project, a feedstock recycling treatment for mixed plastics/cellulose fractions from municipal solid waste (MSW), was discontinued for economic and market reasons.

EXECUTIVE SUMMARY

Other Projects
The Light Concrete project looked at using PVC for a filler for 'light concrete' – used for low weight and high thermal and sound insulation. It was put on hold in 2006 due to limited waste availability but may start again in the future.

Another innovative technology was explored in 2006. German company Sustec Schwarze Pumpe GmbH (SVZ) operates a gasification plant for fluid and solid kinds of waste which can treat waste with a chlorine content of up to 10%. This technology was trialed but costs currently exceed market expectations.

CIFRA is a French producer of calendered PVC films which with financial support from Vinyl 2010 invested in recycling facilities to recycle the rigid films used in the cooling towers of electrical power plants. In 2007, the company plans to participate in Recovinyl.

The APPRICOD project was concluded in 2006 with seminars and a best practice guide on sustainable resource management from the construction, renovation and demolition sector.

Monitoring, Access to Information and Stakeholder Relations

Guidance from the Monitoring Committee
Under the chairmanship of Professor Alfons Buekens of the Free University of Brussels (VUB), the Monitoring Committee monitors and guides the various Vinyl 2010 activities and furthers dialogue with stakeholders. The Committee met twice in 2006. Dr. Jorgo Chatzimarkakis, Member of the European Parliament (MEP) was welcomed onto the Monitoring Committee.

Finance
Expenditure by Vinyl 2010, including EuPC and its members amounted to €7.09 million in 2006 up from €4.44 million in 2005.

Independent Auditors
Vinyl 2010 is committed to transparency and has engaged independent auditors and verifiers.

- The financial accounts of Vinyl 2010 were audited and approved by KPMG.
- KPMG also audited the statement of tonnages of products recycled.
- The Progress Report 2007 was reviewed by DNV and verified as giving a true and honest representation of Vinyl 2010's performance and achievements.
- DNV also verified the phase-out of lead in drinking water pipes.

Encouraging Dialogue with Stakeholders

The PVC industry works actively on communications and dialogue with stakeholders through Vinyl 2010. As a member of the United Nations Partnership for Sustainable Development, Vinyl 2010 attended the 14th Session of the UN Commission on Sustainable Development in New York. Vinyl 2010 also participated in the 2nd International Conference on Quantified Eco-Efficiency Analysis for Sustainability in Egmond aan Zee, the 13th LCA Case Study Symposium in Stuttgart and Green Week in Brussels.

Vinyl 2010 Progress Reports and Executive Summaries, published since 2001, can be downloaded from www.vinyl2010.org.

Key Achievements 2000-2006

- Cadmium stabilisers phased-out in EU-15 (2001)
- Bisphenol A phased out of PVC production in all ECVM member companies (2001)
- 25% recycling of pipes, windows and waterproofing membranes (2003)
- Recognition of Vinyl 2010 as a partner by UN Commission for Sustainable Development (2004)
- Risk assessment on lead stabilisers published (2005)
- 15% reduction in lead stabiliser use achieved ahead of time (2005)
- External verification of ECVM S-PVC and E-PVC production charters (2002 and 2005 respectively)
- Phthalate risk assessments completed (2005) and published (2006)
- Lead stabiliser phase-out in 2015 extended to EU-25 (2006)
- Cadmium stabiliser phase-out extended to EU-25 (2006)
- Recycled tonnages increasing exponentially: 18,077 tonnes in 2004, 38,793 tonnes in 2005 and 82,812 tonnes in 2006

FOREWORD

As the new Chairman of Vinyl 2010, I would like to thank you for your interest in the Progress Report 2007, recording the activities and achievements for the sixth year of the PVC industry's sustainable development programme.

In May 2006, we finalised and published the scheduled review of the entire programme under the supervision of Vinyl 2010's Monitoring Committee. This emphasises our commitment to working with stakeholders, an approach that we continued energetically throughout the year in exchanges with other industries, the scientific community, NGOs, European institutions and the United Nations at conferences, exhibitions and other meetings. As decided in the Midterm review, we worked hard to expand Vinyl 2010's geographical scope, following the enlargement of the European Union.

Although at the core of the programme, there is much more to Vinyl 2010 than waste management projects and innovative recycling techniques. Vinyl 2010 is taking part in the dialogue on the lifelong impact of materials, from production through use to disposal and, where feasible, reuse and recycling. This supports a comprehensive approach based on the life-cycle approach. Therefore, we have updated, in close cooperation with our partners, the Eco-Profile for PVC and are now working on an Environmental Declaration which will provide stakeholders with reliable and robust data on PVC sustainability.

Since ensuring that all PVC applications can be safely used is of utmost concern to us, we very much appreciate the outcome of the EU risk assessment confirming that the main general-purpose phthalate plasticisers DINP and DIDP pose no risk to human health or the environment in any of their current applications.

Most people are not aware that collecting waste is often a greater challenge than recycling. The current market conditions for PVC waste are influenced by a complex interaction of economic, technical and regulatory factors. Accessing and assuring steady streams of appropriate post-consumer PVC waste requires tenacity, flexibility and creativity of organisation to operate in a constantly-evolving waste market.

As part of our response to this challenge, we further developed and implemented the Recovinyl system. Since its operational introduction in 2005, Recovinyl has built on the hard work of other sector projects and proved its effectiveness with an impressive increase in PVC waste collection. This, together with a progressive geographical extension and natural synergies, allows us to look with confidence towards the achievement of our recycling targets.

Finally I want to thank the members of Vinyl 2010's Monitoring Committee for their continuous advice, guidance and positive contribution which is of the greatest value for the advancement of the programme and the credibility of our efforts. As the European Union celebrates its 50th anniversary this year, the PVC industry reaffirms its commitment to sustainable development and to moving towards the targets we set ourselves.

Josef Ertl, Chairman Vinyl 2010

STATEMENT FROM THE CHAIRMAN OF THE MONITORING COMMITTEE

The role of the Monitoring Committee is not just to check and evaluate Vinyl 2010's activities and achievements but also to assist and encourage wherever possible, as I am always keen to emphasise. Of course, all industry's stakeholders have an important role to play, but I am particularly glad to see a strong ongoing commitment from the European Parliament, the European Commission, trade unions and also consumer organisation representatives, who all participate actively in the Monitoring Committee and ensure continuity even during different, successive EU legislatures.

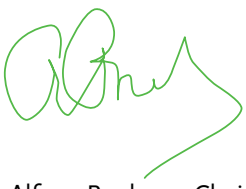
In particular, I would like therefore to welcome the new member of the Monitoring Committee, MEP Dr. Jorgo Chatzimarkakis. With great interest we look forward to hearing his views as part of our Committee.

After a doubling of post-consumer waste collection figures in 2005, I am impressed to see once more another significant increase in the amounts of PVC waste collected and recycled through the Vinyl 2010 initiatives. Everyone should be pleased by this step forward, as it is the result of sustained effort, initiative and innovation. I was happy to note the progressive consolidation of collection schemes and the parallel development of the Recovinyl project. This is a real move forward towards sustainable development and to the sustainability of this industry.

Once more, I was satisfied to see the industry in 2006 move closer to the replacement of lead stabilisers in PVC. These have now been phased out of drinking water pipes (with the exception of Greece, Portugal and Spain – who need to follow quickly). There have of course also been some setbacks and remaining challenges. I was naturally disappointed by the failure of the Stigsnaes feedstock recycling plant. In other parts of the EU however the importance of sound and enforced landfill regulations is very clear. In Germany for example restrictions on landfill have once more boosted the availability of waste for recycling.

Looking at the European horizon, the Committee pays great attention to the progressive integration of the new EU member countries into the Vinyl 2010 framework and it has underlined the importance of the extension of some critical targets to the EU-25 in the revised Voluntary Commitment. These will be extended to the EU-27 following the latest enlargement. We were therefore pleased to see the active participation of PVC industry representatives from the new Member States at meetings and seminars in 2006, the last one in St Petersburg where a very large number of Russian representatives were also present, exchanging information and showing interest in the Vinyl 2010 initiative.

To conclude, in 2006 I have seen many instances of serious and concrete commitment. On this basis, I believe that 2007 will see further progress towards the achievement of all the challenging targets of the Voluntary Commitment.



Alfons Buekens, Chairman of the Monitoring Committee

WORKING TOGETHER

The Monitoring Committee

The objective of the Committee is to monitor the implementation of the Voluntary Commitment and to ensure transparency of the Vinyl 2010 programme. Furthermore it helps the industry in its dialogue with stakeholders and in providing information to meet their needs and expectations.

The Monitoring Committee, which has always invited the involvement and participation of stakeholders and third parties including environmental NGOs, held its first meeting in 2003 with senior representatives from the European Commission, the European Parliament, trade unions and representatives of the associations grouped in Vinyl 2010, and has now been joined by consumer organisations.

In 2006, under the Chairmanship of Professor Alfons Buekens of the VUB[1], the Monitoring Committee met twice to monitor and review the progress on the Voluntary Commitment, and was actively involved in the midterm revision of the Voluntary Commitment which was published in May 2006.

In March 2006, Vinyl 2010 welcomed the participation in the Monitoring Committee of Dr. Jorgo Chatzimarkakis, Member of the European Parliament's ITRE Committee (Industry, Research and Energy). Dr. Chatzimarkakis succeeded Mrs. Dorette Corbey who withdrew from the Committee in 2005.

The minutes of the Monitoring Committee are public and are published on the Vinyl 2010 website (www.vinyl2010.org).

Members
From left to right in the photograph:

Professor Alfons Buekens, VUB, Chairman of the Monitoring Committee

Mr. Joachim Eckstein, Vice Chairman of Vinyl 2010

Mr. Alexandre Dangis, Managing Director of EuPC

Dr. Jorgo Chatzimarkakis, Member of the European Parliament

Dr. Brigitte Dero, Secretary General of ESPA

Mr. John Purvis, Member of the European Parliament, Industry Committee

Ms. Karolina Fras, deputising for Mr. Timo Mäkela, Director, European Commission, Directorate General Environment

Mr. Jean-Pierre De Grève, Secretary General of Vinyl 2010

Mr. Klaus Berend, Head of Chemicals Unit, European Commission, Directorate General Enterprise

Dr. Josef Ertl, Chairman of Vinyl 2010

Mr. Maik Schmahl, deputising for Mr. Patrick Hennessy, Director, European Commission, Directorate General Enterprise

Not in the photograph:

Mr. Jean-François Renucci, EMCEF[2]

Mr. Carlos Sanchez-Reyes de Palacio, OCU[3]

[1] VUB: Free University of Brussels (www.vub.ac.be)
[2] EMCEF: European Mine, Chemical and Energy Workers Federation (www.emcef.org)
[3] OCU: Organización de Consumidores y Usuarios – Spanish Consumers and Users Organisation (www.ocu.org)

European Union Enlargement

Vinyl 2010 is working hard towards extending the Voluntary Commitment to the new EU Member States, particularly in the field of PVC production, health and safety requirements and waste management.

In October 2006, a special seminar on 'Health, Safety and Environment Issues in PVC Manufacturing, Processing and Use' was organised in St Petersburg linked to the 18th Global Vinyl Council. More than 80 representatives from all over the world including from Central and Eastern Europe and the Russian Federation attended the event. The core discussions were on environmental issues related to PVC, with the aim of stimulating progress and motivating the industry onto the road of sustainable development. Occupational health regulations relevant for EDC (Ethylene Dichloride), VCM (Vinyl Chloride Monomer) and PVC manufacturing in particular, and the cooperation with trade unions for an effective social dialogue were also discussed.

EuPC Post-Consumer Waste Studies in Eastern Europe

In 2006, EuPC[4] concluded two studies in Hungary and Poland to estimate the trend of post-consumer PVC waste volumes for the period 2005-2020. The model elaborated by EuPC is based on several parameters such as historical production, future market growth, import and export, availability and collectability of waste. The studies forecast a growing trend of PVC waste in Hungary and Poland, both in rigid and flexible applications. In Poland, the increase of available PVC waste is mainly due to the building and construction sector, with a substantial increase for cables and flooring. In Hungary too, an increase in building and construction sector is expected, but slightly less than in Poland.

Stakeholder Dialogue

Stakeholder dialogue with third parties, institutions and organisations is a core part of Vinyl 2010's policy. A good corporate governance policy increasingly recognises the need for openness and disclosure and for frank confrontation with the technical, political and social community. Transparency promotes accountability and builds trust.

Facing the challenges of an ever more globalised world, Vinyl 2010 cooperates with other PVC industry regional associations like the Vinyl Institute in the US, the Vinyl Council of Australia, the Vinyl Council of Canada, the South American and Asia-Pacific Vinyl Networks and European trade unions for the promotion and sharing of best practice and good product stewardship.

United Nations Partnership

Since 2004, Vinyl 2010 has been a Member of the UN Partnership for Sustainable Development. This initiative creates partnerships with organisations that work to implement the sustainable development goals set out by the Agenda 21, Rio+5 and the Johannesburg Plan of Implementation (JPOI).

Vinyl 2010 was invited to present its commitment at the 14th session of the CSD (Commission on Sustainable Development) Partnerships Fair at the UN Headquarters in New York in May 2006.

To access the Vinyl 2010 presentation please visit: www.un.org/esa/sustdev/csd/csd14/PF/info/Vinyl.ppt.

For a review of the event, please visit: www.un.org/esa/sustdev/csd/review.htm.

[4] EuPC: European Plastics Converters (www.plasticsconverters.eu)

Conferences and Exhibitions
During 2006, Vinyl 2010 was present at:

- 14th Session of the UN Commission on Sustainable Development in New York, USA, 1-12 May. Vinyl 2010 participated in this meeting as a member of the UN Partnership for Sustainable Development. The focus was on areas such as Energy for Sustainable Development and Industrial Development. Vinyl 2010 presented its commitments, projects and achievements as an example of a successful and effective industrial partnership and was present in the exhibition area with an 'info desk'.

- 2nd International Conference on Quantified Eco-Efficiency Analysis for Sustainability in Egmond aan Zee, Netherlands, 28-30 June. The conference's aim was to further develop the understanding of the eco-efficiency and LCA (Life-Cycle Assessment) concept, its implementation by industry and the policies which are most effective at promoting it. Vinyl 2010, as an industry representative, shared its approach on these themes in a special plenary poster session.

- 13th LCA Case Study Symposium in Stuttgart, Germany, 7-8 December. This Symposium aimed to review and discuss the guidelines and standardisation methodologies for EPD (Environmental Product Declarations) and LCA (Life-Cycle Assessment), with a focus on the building and construction sector. The PVC industry represented by Vinyl 2010 attended the event with informative posters as well as making available relevant documentation (Voluntary Commitment and Progress Report) to all the participants.

Vinyl 2010 Board

Mr. Alexandre Dangis – Board Member
Dr. Brigitte Dero – Board Member
Mr. Jean-Pierre De Grève – Secretary General
Mr. Joachim Eckstein – Vice Chairman
Dr. Josef Ertl – Chairman
Dr. Michael Rosenthal – Treasurer

New Members (since January 2007)
Mr. David Clark – Board Member representing Flexible PVC sector
Mr. Marc Gillin – Board Member
Mr. Henk ten Hove – Board Member representing Rigid PVC sector
Mr. Ashley Reed – Board Member

MILESTONES AND TARGETS

Achievements and Results for 2006

QUARTER 1

- **Redop:** Steering Committee to decide whether to continue with the project
  - ▸ **Achieved**
- **ESPA:** publication of 2005 statistics on the tonnages of PVC stabilisers
  - ▸ **Achieved**
- **Vinyloop® Ferrara:** start construction of the Texyloop® technology pilot plant
  - ▸ **Achieved in Q4**
- **TEPPFA:** verification audit on Company Members' commitment to replace lead stabiliser in drinking water pipes in 2005, except for Greece, Portugal and Spain
  - ▸ **Achieved**
- **APPRICOD:** reporting on project and dissemination of results (regional seminars)
  - ▸ **Achieved**
- **EPFLOOR:** start collection in the UK ▸ **Achieved in pilot stage**
  start a regular collection scheme with selected outlets in France ▸ **Achieved**

QUARTER 2

- **EPPA and TEPPFA:** joint collection scheme in Spain; integration into the Recovinyl project
  - ▸ **Postponed to 2007**
- **APPRICOD:** dissemination of results (European workshop)
  - ▸ **Achieved**
- **EPFLOOR:** evaluation of collection trial in Vienna, Austria
  - ▸ **Achieved (but no follow-up due to the extremely limited volumes)**
- **Halosep®:** conclusion of the project
  - ▸ **Achieved in Q3**

QUARTER 3

- **APPRICOD:** publication of good practice guide
  - ▸ **Achieved**

QUARTER 4

- **Recovinyl:** expansion of collection points at container parks in Belgium; cooperation with local authorities in the Netherlands; implementation of the concept in France; focus on long-life applications in the UK
  - ▸ **Achieved**
- **EPCOAT:** increase tonnage within the IVK collection project above the target value of 2,500 tonnes[5]
  - ▸ **112% of target achieved**
- **Roofcollect:** double the recycling of available collectable waste from roofing membranes
  - ▸ **Achieved**

[5] Due to a mistake, the target value stated in last year's report was 3,000 tonnes. The correct target value is 2,500 tonnes. This fact is verified and confirmed by DNV, Vinyl 2010's independent verifier.

Targets for 2007

QUARTER 1

- **EPPA and TEPPFA:** integrate WUPPI-Denmark into Recovinyl
- **EPFLOOR:** develop new technologies in the UK
- **ESPA:** publish 2006 statistics on PVC stabiliser tonnages

QUARTER 2

- **PVC resin:** publish PVC Environmental Declaration (ED)
- **EPPA and TEPPFA:** joint collection scheme in Spain; integration into Recovinyl

QUARTER 3

- **Stewardship conference:** in Asia under the auspices of Global Vinyl Council

QUARTER 4

- **EPCOAT:** continue collection of post-consumer coated fabrics waste
- **Recovinyl:** have recycled 67,000 tonnes of PVC waste throughout year
- **Vinyloop®:** start-up of new decanter centrifuge
- **Vinyloop®:** treat 7,200 tonnes of waste to produce 5,200 tonnes of R-PVC
- **EPFLOOR:** mechanical recycling pilot test in Sweden; identify recyclers in France; recycle 2,200 tonnes post-consumer flooring waste

PROJECT REPORTS

PVC Resin Manufacturing

A cornerstone of the Vinyl 2010 Voluntary Commitment is protection of the environment. PVC resin manufacturers have signed two Industry Charters, one for PVC production by the suspension method (the S-PVC Charter) and one for the emulsion method (the E-PVC Charter). The aim of both is to reduce environmental impact and improve eco-efficiency in the production phase through compliance with the stringent terms of these documents. DNV verified the PVC industry's compliance with the Charters for Suspension PVC and Emulsion PVC in 2002 and 2004 respectively (more details at www.ecvm.org).

Best Available Technology Reference Document (BREF)

A milestone for Vinyl 2010 was the publication by the European Commission in October 2006 of the final version of the Polymers BREF (Reference Document on Best Available Techniques in the Production of Polymers), after many years of close cooperation between industry and the European Commission. A BREF is a reference document for best available technology (BAT), a document which contributes to environmental protection by providing guidelines, for example for emissions and fugitive emissions, as anticipated in last year's Progress Report. The PVC industry contributed significantly to the production of this highly-technical document and supported the Commission in its work. The BREF document is available at http://eippcb.jrc.es/pages/FActivities.htm.

While the BREF is not mandatory, it is used by permitting authorities as a guideline when applying emission limit values. Although local conditions may vary, the PVC industry believes that it is helpful to set an example and share best available technology.

Eco-Profile and Environmental Declaration (ED)

Vinyl 2010 has participated in developing an Eco-Profile for PVC. Eco-Profiles form part of Life-Cycle Assessment or LCA, a cradle-to-grave analysis of the environmental impact of a product. In 2006, the Eco-Profile of PVC first developed in the Nineties through APME, now Plastics*Europe*, was fully updated, building on the work of previous years. In order to guarantee total transparency, data collection and calculations were done by the external organisation IFEU[6] in Heidelberg. Even though the actual production process for PVC has changed little over the last two decades, the use of fossil fuels and total energy demand has been reduced considerably, as has the overall environmental impact.

The next step in applying the life-cycle approach to PVC is comparable to the Environmental Product Declaration (EPD). The EPD has been pioneered in France, Germany and Sweden. Based on Eco-Profiles, the EPD provides environmental impact data with indicators, for example on greenhouse gases but can also make available additional information such as on health aspects and performance.

In 2007, the PVC industry will develop Environmental Declarations for S-PVC and E-PVC, based on the Eco-Profile results. These Environmental Declarations will be similar in many ways to an Environmental Product Declaration but as PVC resin is a material not a finished product, the term Environmental Declaration seems more appropriate. Environmental Declarations will be helpful to downstream users and stakeholders, by providing a useful and verified resource for studies and research.

Plasticisers

Plasticisers are added to PVC resin to enable the production of a wide variety of flexible products ranging from medical tubing to flooring.

Risk Assessments

After more than ten years of research and debate, the results of the EU risk assessments for the main general-purpose phthalate plasticisers were published. The review of diisononyl phthalate (DINP) and diisodecyl phthalate (DIDP) were published in the EU Official Journal in April 2006, although the technical data had been made available previously. The EU risk assessments show that these substances pose no risk to human health or the environment in any of their current applications.

[6]IFEU: Institut für Energie- und Umweltforschung – Institute for Energy and Environmental Research (www.ifeu.org)

EU experts considered the use of the two substances in applications such as automotive, flooring, wall coverings, cable and wiring as part of the comprehensive risk assessment process.

Also in April 2006, the EU Official Journal published the risk assessment for dibutyl phthalate (DBP). It shows some risk to plants in the vicinity of processing sites and to workers through inhalation. But in both cases, simple measures can be implemented should they not already exist. Following the assessment, measures are to be taken within the framework of the IPPC Directive (96/61/EC) and the Occupational Exposure Directive (98/24/EC).

The technical report for the risk assessment of di(2-ethylhexyl) phthalate (DEHP) has been performed and it is awaiting publication by the EU's Joint Research Centre (JRC) on their website. The risk assessment also awaits final publication in the EU Official Journal but EU Member State experts have already concluded that its use does not present a health risk to the general population. The risk assessment for butylbenzyl phthalate (BBP) is expected to be published in 2007.

Phthalates are now among the most extensively studied substances in the world. All the information that exists, together with the EU risk assessments, will help the industry in implementing the European regulation REACH[7] which enters into force in June 2007.

Plasticiser Research

ECPI[8] has built up extensive data to provide information about plasticisers. To further support this data gathering, a major study with human volunteers is planned. A pilot study was carried out in the autumn of 2006. Analysis of the data is now taking place to develop and validate analytical methods.

[7] REACH: Registration, Evaluation, Authorisation and restriction of CHemicals

[8] ECPI: European Council for Plasticisers and Intermediates (www.ecpi.org)

[9] ESPA: European Stabiliser Producers Association (www.stabilisers.org)

Availability of Information

ECPI communicated on the publication of the risk assessments in a series of advertisements and advertorials in specialist media over the second half of 2006 and reaffirms its commitment to providing high quality and extensive information about the safe use of phthalates via its websites and outreach activities. The main websites are the Plasticisers Information Centre (www.plasticisers.org) and the Phthalates Information Centre (www.phthalates.com).

Stabilisers

Stabilisers are added to PVC to allow it to be processed and to make it resistant to external factors including heat and sunlight (ultraviolet rays). The revision of the Voluntary Commitment in 2006 took into account the issues related to stabilisers in recycled plastics.

Concerning recycling plastics, in particular, the Voluntary Commitment states that "no unacceptable risk has been identified in the use of recycled plastics containing cadmium and lead stabilisers which would preclude the continued recycling of PVC applications containing such stabilisers. Both these stabiliser systems will be subject to the new EU legislation – REACH. Accepting recycling of applications containing cadmium and lead is the most sustainable way to avoid dissemination of these substances into the environment".

Lead Replacement

In 2000, ESPA[9] and EuPC committed to replace lead stabilisers by 2015 in the EU-15, with interim targets of a 15% reduction by 2005 and a 50% reduction by 2010. Following the enlargement of the European Union, the two organisations pledged in May 2006 to extend the phase-out of lead stabilisers to the EU-25 by 2015, and endorsed it into the revised Voluntary Commitment. Since the further enlargement in January 2007, this will be extended to the EU-27. Statistics on stabilisers for the EU-27 will be published and reported in the Progress Report for the year 2007 onwards.

The 20.2% reduction of lead stabilisers in 2005 in the EU-15 resulted in meeting the Voluntary Commitment interim target of a 15% reduction by 2005 one year early. This progress continued in 2006 with a 21.3% reduction against the 2000 figures.

Tonnes of stabiliser systems	2000	2006	Reduction (%)
Formulated* lead stabilisers	127,156	100,129	21.3

* Formulated means that these systems are complete stabiliser/lubricant packages and many also include pigments or fillers as a service to the customer. Their major use is in pipes and profiles for construction and electrical cables.

The continuous reduction in the use of lead stabilisers is shown by an increase of calcium-based stabilisers, with good progress particularly in the Benelux, Italy, Spain and the UK. Given this progress towards lead substitution, ESPA is confident that it will meet its interim target of 50% substitution by 2010.

European Production Data

The following table shows sales of other stabilisers in the EU-15 plus Norway, Switzerland and Turkey.

Tonnes of stabiliser systems	2000	2006
Formulated* calcium organic stabilisers e.g. Ca/Zn systems[1]	17,579	47,895
Tin stabilisers[2]	14,666	15,908
Liquid stabilisers – Ba/Zn or Ca/Zn[3]	16,709	14,265

*Formulated means that these systems are complete stabiliser/lubricant packages and may also include pigments or fillers as a service to the customer.
[1]Includes food contact and medical applications, plus all lead replacement systems.
[2]Used primarily in rigid applications including food contact use.
[3]Used in a wide range of flexible applications, calendered sheets, flooring, etc.

Cadmium Phase-Out

Cadmium stabilisers were phased out in the EU-15 in 2001 by ESPA and EuPC, and Vinyl 2010 confirms that this phase-out was extended to the entire EU-25 by the end of 2006.

PVC WASTE MANAGEMENT: SECTORAL PROJECTS

Recovinyl

Several sectoral projects are being progressively integrated into Recovinyl, building on the wealth of experience gathered over the last years by the projects. Increasing volumes of PVC have been collected and recycled by Recovinyl within the scope and remit of Vinyl 2010. Recovinyl facilitates the collection, sorting, dispatching and recycling of mixed PVC post-consumer waste, mainly from the building and construction sectors. With the help of financial incentives from Vinyl 2010, the Recovinyl system aims to collect at least 75,000 tonnes of waste annually throughout Europe by 2010. But unlike the projects mentioned below, Recovinyl does not collect or recycle itself, but utilises and motivates existing players in the market.

In 2006, Recovinyl changed its legal status from a commercial activity to a non-profit association to strengthen its independence in the market. It developed a website - www.recovinyl.com - to communicate on its work and to provide tools for registering waste volumes online. In addition to its activities in Belgium, the Netherlands and the UK, 2006 saw Recovinyl extend its reach to France and Germany. The target for 2007 is to bring Recovinyl to Denmark, Italy and Spain and to analyse the conditions in Austria and Sweden.

Recovinyl was responsible for collecting 44,690 tonnes waste in 2006. High raw material prices led to higher demand for recyclates and once more the landfill restrictions in Germany meant an increase in post-consumer material available for recycling. Recovinyl's expenditure increased from €1.4 million in 2005 to €2.91 million in 2006.

Recovinyl collects mixed PVC waste and after sorting apportions the volumes of pipes, profiles, etc collected to the sectoral projects within Vinyl 2010 leaving only the residual mixed waste to be reported against Recovinyl, in 2006 this was 44,690 tonnes. The figures in the table show the total volumes collected by Recovinyl in 2006.

Recovinyl Waste Collection

	Year 2005*	Year 2006
Belgium	1,500	2,739
France	2,000**	7,446
Germany	-	5,522
Ireland	-	251
Italy	-	828
Netherlands	4,500	10,972
Spain	-	2
Sweden	-	94
UK	8,000	16,836
Total	**16,000**	**44,690**

* Actual figures in tonnes.
** This volume was recycled by PVC Recyclage, now included in Recovinyl.

The 2006 collection figures were given a boost particularly in Belgium where Recovinyl launched projects for recycling PVC from cooling towers. This recycling was also seen in France through CIFRA and in Germany. In France, the number of certified recyclers increased to 10 with 90 collection points. In the UK, there are now 25 recyclers with 70% of the volume recycled coming from window profiles. In Belgium, the use of containers for recycling PVC has increased.

In Germany, three tests were carried out: the first to improve sorting of post-consumer PVC waste at the point of entry to MBT (Mechanical Biological Treatment) and dedicated sorting facilities, the second to analyse the rigid plastics fraction and the third to test infra-red (NIR) efficiency for sorting mixed stream PVC waste.

In 2007, Recovinyl hopes to revitalise its Spanish project which stopped in Catalonia in 2006, as well as extending to the Madrid region. Another project for Recovinyl in 2007 is to analyse the network of recyclers in the Czech Republic and Poland to quantify the exports received from Germany. Limitation of cheap alternatives to end-of-life solutions would give a strong boost to the amount of waste available for collection.

Window Profiles

EPPA[10] working in cooperation with Recovinyl now has post-consumer window collection and recycling projects in Austria, Denmark, Germany and Italy with systems being implemented in 2006 in Belgium, France, the Netherlands, the UK and Ireland. Only Spain is still in the initial phase. EPPA saw a steady increase in 2006 of available, collectable post-consumer window waste, fulfilling its 2006 targets.

National Developments

In Germany, still Europe's largest market for PVC windows, the landfill restrictions continued to have a positive impact on the amount of available waste. Rewindo, Germany's largest clearing house for post-consumer PVC windows, confirmed its successful market approach with a steady increase of waste acquisition. As a joint initiative between EPPA/Rewindo, TEPPFA[11]/KRV[12], EPFLOOR[13]/AgPR[14], EPCOAT[15]/IVK[16] and Roofcollect and in cooperation with Recovinyl, 'Aktion PVC Recycling' promoted the concept in Germany of recycling PVC window profiles, floors, pipes, coated fabrics and roof membranes in Germany. This initiative is set to continue in 2007.

EPPA also noted an increase in direct reuse of PVC window profiles at end-of-life and made a presentation on reuse and recycling at the Nuremberg Fair in March 2006. Austria, a country which traditionally favours wooden windows, nevertheless succeeded in increasing its recycling of PVC window profiles to 260 tonnes. The Austrian organisation ÖAKF (www.fenster.at) continued to focus on public information as a means to increase recycling figures.

In Denmark too, there was a steady increase of volumes recycled. WUPPI, a joint EPPA/TEPPFA project ran a synergy project for the joint collection of rigid building products. In addition, the Danish government in 2007 plans to support and promote mechanical recycling. A new structure for collection in Danish local communities should boost recycling figures further in 2007. Increased cooperation is also expected through the Scandinavian arm of the Recovinyl scheme.

In France, Recovinyl implemented its programme through PVC Recyclage – an association which has developed a network of collection points since 2001. A remarkable increase in PVC post-consumer waste came from all sectors but particularly from the window sector, due to the promotion and awareness-raising activities carried out in previous years in France. The project hopes for the steady increase in collection to continue in 2007.

Recovinyl was launched successfully in the United Kingdom, benefiting from previous detailed groundwork by the British Plastics Federation (BPF) Windows Group, which reported an increase in both available PVC waste quantities and actual quantities recycled. In 2007, the BPF Windows Group predicts a further steady increase in waste and will continue to communicate on PVC recycling.

In Ireland, due to the relatively small size of the market and cost of treatment, the PVC group discontinued its project and instead supports the UK system.

In Italy, the Re-win three-year pilot project by EPPA to recycle windows was completed. This project evaluated available waste as well as communicating on the recycling of post-consumer PVC windows and shutters. However, PVC windows in Italy have not yet reached their end-of-life but could have a significant impact on volumes in future. Some PVC waste is available, for example up to 1,500 tonnes of end-of-life shutters annually from the building and demolition sectors. In Spain as in Italy, only small quantities of PVC window waste are available for recycling. Spanish recycling is starting to be done through the Recovinyl scheme.

[10] EPPA: European PVC Window Profile and Related Building Products Association, an EuPC sector group (www.eppa-profiles.org)
[11] TEPPFA: European Plastic Pipes and Fittings Association, an EuPC sectoral association (www.teppfa.org)
[12] KVR: Kunststoffrohrverband – Plastics, Pipe, Recycling Industry (www.krv.de)
[13] EPFLOOR: European PVC Floor Manufacturers, an EuPC sectoral group (www.epfloor.eu)
[14] AgPR: Association for PVC Floor-covering Recycling (www.agpr.de)
[15] EPCOAT: EuPC PVC Coated Fabrics Sector Group (www.eupc.org/epcoat)
[16] IVK: Industrieverband Kunststoffbahnen – Association of Coated Fabrics and Films (www.ivk-frankfurt.de)

In Belgium and the Netherlands the cooperation on collection initiated under the umbrella of Recovinyl in 2005 continued its activities with a steady increase of building and construction post-consumer PVC waste.

Pipes and Fittings

Cooperation between TEPPFA and Recovinyl increased in 2006 with many projects previously run by TEPPFA integrated into the Recovinyl system. From January 2007, WUPPI-Denmark will join Recovinyl: Austria, Italy, Portugal, Spain and then Sweden will also be integrated into Recovinyl in the near future.

TEPPFA's experience with promoting recycling schemes shows that availability of pipe waste is less than for window profiles, as pipes not only have longer life-cycles but are often left in the ground once decommissioned. Pipe waste collection volumes could nevertheless increase if pre-sorting of mixed building waste were carried out.

Lead Replacement

TEPPFA confirmed the phase-out in early 2006 of lead stabilisers from drinking water pipes, except in Greece, Portugal and Spain. These last countries expect to achieve a full phase-out of lead stabilisers in drinking water pipes in 2007. The external monitoring organisation DNV tested and approved samples.

Roofing Membranes

The European plastics roofing membrane manufacturers represented by ESWA[17] through its project Roofcollect vastly exceeded their commitment for collection of post-consumer PVC waste. Roofcollect's commitment for 2006 was 2,000 tonnes and it recycled 10,504 tonnes in 2006, a dramatic increase on 2005 levels, when difficulties mainly due to the RGS 90 Stigsnaes plant were experienced.

The Roofcollect collection system is now fully up to speed, successfully extending its geographical scope and product offering since 2005. Roofcollect now also accepts waste from waste management companies, demolishers and municipalities, instead of being limited just to roofers. Although its core business is roofing and waterproof membranes, Roofcollect extended its collection system to non-roofing materials, and now collects all types of post-consumer waste of PVC membranes not covered by existing Vinyl 2010 projects. Some examples are swimming pool membranes in the south of France, protection sheets from the Atomium in Brussels, printed semi-rigid decorative laminating foils in Eastern France as well as the collection of soft PVC in Spain and Germany.

The geographic reach of the Roofcollect programme also increased: Germany continued to be a strong market with the successful launch of a registration system, in the Benelux and France collection schemes were relaunched and the UK had a promising start in 2006. Italy and Austria were also brought into Roofcollect in 2006 and contact with potential partners started in Spain, the Netherlands and the Nordic countries.

[17] ESWA: European Single Ply Waterproofing Association, an EuPC sectoral association (www.eswa.be)

Partnership with several recycling plants is also part of Roofcollect's core activity. Following the closure of AfDR[18], the failure of the RGS 90 Stigsnaes plant to provide an outlet as expected, and the lack of available capacity from MVR Hamburg experienced in the last two years, satisfactory relationships have been set up with Hoser (to recycle PVC roofing into drainage sheets for riding arenas and stables) and KVS for the shredding of rigid and soft plastics which are then sold to a number of customers to be reused in a range of PVC products. CIFRA is the other plant involved in recycling within the Roofcollect system. For more information see page 24.

Flooring

In 2005, the Danish recycling plant of RGS 90 at Stigsnaes decided that it would not accept PVC waste. This resulted in a challenge for the PVC flooring sector to find an outlet for the lower quality post-consumer waste coming from flooring applications. Market factors also resulted in a situation where certain grades of flooring waste were no longer accepted. However, EPFLOOR still managed to exceed its target by recycling 1,776 tonnes, a 2.78% increase on 2005 levels. These volumes have been used to make a range of products including flooring, street furniture, construction products and hoses.

To compensate for the situation at Stigsnaes, other recycling activities were increased, for example through the AgPR plant. A pilot collection scheme in the UK was also launched in 2006. The collection scheme was extended in France. Extending EPFLOOR to Vienna was discontinued as the available volumes were too limited.

The EPFLOOR target for 2007 is 2,200 tonnes. EPFLOOR will cooperate with Recovinyl in Sweden and the UK. One challenge is to identify recyclers in France as currently flooring waste is transported to Germany for recycling. A pilot project will be launched in Sweden for mechanical recycling. It is hoped that the market for AgPR recyclate will also be further developed.

In the UK, tests are being carried out into the processing of safety flooring which has abrasive particles causing wear and tear to the machinery.

Coated Fabrics

The EPCOAT project is demonstrating the feasibility of recycling waste from the European PVC coated fabrics sector – covering applications such as tarpaulins, tents, marquees, advertising panels and artificial leather – which is participating in the recycling targets of Vinyl 2010. Some post-consumer coated fabric waste is also collected by Roofcollect.

The EPCOAT collection scheme has seen a rapid increase in volumes collected in Germany, rising dramatically from 22.5 tonnes in 2004 to 1,346 tonnes in 2005. The 2006 achievement is 2,804 tonnes. This is predicted to increase to 3,500 tonnes in 2007. Exports of waste to Eastern Europe and Asia remain a challenge to Vinyl 2010 in this sector.

EPCOAT has continued its relationship with the company Hoser, in Kodersdorf, which in 2005 started recycling coated fabrics for its line of drainage sheets. In 2006, an additional 245 tonnes were recycled by Arrow Plast, in Landau/Pfalz, Germany which makes granulates for plasticisers. Recycling at Friedola, an EPCOAT member, is still being explored. Tests are ongoing to determine if there is a market for the coated fabrics recyclates from their compacting system. In September 2006, a test was successfully carried out with 11 tonnes of truck tarpaulins.

The artificial leather sector is seen as having potential for its PVC waste products, particularly as with coated fabrics there is a large amount of pre-fabrication waste, up to 50% in some applications. This sector will continue to be explored in 2007 in France and Germany.

[18] AfDR: Arbeitsgemeinschaft PVC-Dachbahnen Recycling/ Working Party for PVC Roof Membrane Recycling

PVC WASTE MANAGEMENT: RECYCLING TECHNOLOGIES, PLANTS AND PROJECTS

Vinyloop®

Vinyloop® is a mechanical recycling technology based on solvents to produce high quality R-PVC (recycled PVC) compounds.

In 2006, technological improvements were made at the Ferrara plant in order to further reduce costs and energy consumption, and to improve R-PVC quality. As anticipated in the previous Progress Reports, a significant investment was planned for solving the problems caused by the quality of cable waste, which is often inhomogeneous and contaminated by copper and fibres. Together with a closer cooperation with cable recyclers and the installation of a new type of secondary filter plate, a technical breakthrough was made in the installation of a new decanter centrifuge which will be operational in the second half of 2007.

The new decanter will allow a significant reduction in the contamination and filler contents of cable waste.

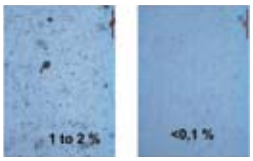
In terms of R-PVC sales, Vinyloop® Ferrara saw a dramatic increase in 2006, with approximately twice the 2005 sales volume, with requests exceeding the current production capacity.

In the second half of 2007, the start-up of the Texyloop® pilot plant is scheduled, with a capacity of 2,000 tonnes of waste. The plant will essentially be dedicated to the treatment of tarpaulins (30% fibres), but depending upon availability of waste, could also be used to treat other fibres containing PVC waste.

Although it is not included in the Vinyl 2010 scheme, a second Vinyloop® plant with a capacity of 18kt started up in September 2006 in Japan, operated by Kobelco Vinyloop® East Co.

Decanter Centrifuge Impact

Reduced filler content	
Filter	Decanter Centrifuge
30%	0.3%



Current filter | Decanter Centrifuge

Redop

The Redop project (REDuction of iron Ore in blast furnace plants by Plastics from municipal solid waste) is a feedstock recycling treatment for mixed plastics/cellulose fractions from municipal solid waste (MSW). The project was re-examined in Q1 2006, after pilot trials, and the steering group concluded that the economic and market conditions do not justify proceeding with the next step of this project for the time being.

Halosep®

The Halosep® process was designed with assistance from Vinyl 2010 to make use of flue gas residues generated during the incineration of waste containing chlorine.

The trial phase was completed during 2006 in Denmark. The Halosep® treatment of residues from wet and semi-dry flue gas treatment processes contributes to environmental protection by separating chlorides and heavy metals from the waste residue. Not only does this reduce the quantity and hazardousness of waste, it also transforms a large part of the waste into a marketable product, and, according the owner RGS 90, at a competitive cost.

RGS 90 is now looking for partners to build a demonstration plant of commercial size.

PVC WASTE MANAGEMENT: OTHER PROJECTS

Light Concrete

This project aimed to determine whether PVC can be used as a filler for light concrete – lightweight concrete products, normally made by adding lower density materials e.g. clay or polystyrene to the concrete. Non-structural applications make use of these fillers for example for providing thermal and acoustic insulation or for lightweight roofing. If PVC could be used for light concrete, it would provide a sizeable outlet for construction or demolition material which may be contaminated with other materials such as cement and difficult to recycle conventionally. For some applications, PVC-based light concrete would have a cost advantage over using virgin materials while offering comparable properties and a sustainable solution.

The Light Concrete project has been put on hold currently due to limited waste availability, but Vinyl 2010 hopes that it can be revitalised in the future as the feasibility study showed good results. Other opportunities are being sought for the Light Concrete project as, from a technical point of view, it is promising.

Sustec Schwarze Pumpe GmbH (SVZ)

Vinyl 2010 continues its exploration of existing technologies of feedstock recycling, in order to handle and recover waste with a high content of PVC which is not suited to mechanical recycling. The technology proposed by the German company Sustec Schwarze Pumpe GmbH (SVZ), which operates a gasification plant for fluid and solid kinds of waste, was investigated in 2006.

SVZ can treat waste with a relatively high chlorine content, i.e. up to 10%. However, the treatment costs appear not to match market expectations for the time being which may influence the future use of this technology.

CIFRA

CIFRA is a French producer of calendered PVC films which received financial support from Vinyl 2010 to invest in recycling facilities.

The CIFRA project was set up to recycled the rigid films used in the cooling towers of electrical power plants. In 2006, CIFRA recycled 1,057 tonnes in a project to recycle PVC scraps from cooling towers and 131 tonnes of other post-consumer waste.

APPRICOD – ACR+

The APPRICOD[19] project was launched in December 2003 under the umbrella of the EU Life initiative. It was the follow-on from a pilot project by Vinyl 2010 and the Associations of Cities and Regions for Recycling and Sustainable Resource Management (ACR+) that started in 2001.

APPRICOD's main aim was to assess the potential of plastic recycling in the construction and demolition (C&D) sector which supplies the largest waste stream in the EU. In terms of weight, plastics in C&D waste are a small component, but in terms of volume they represent significantly more.

The results of the project, which was completed in May 2006, were published in the guide *Towards Sustainable Plastic C&D Waste Management in Europe* which is available in six language versions through the www.appricod.org website.

The guide aims to give technical, environmental and economic information on C&D waste management as well as sharing best practice from the pilot projects including insight into specific national legal and financial frameworks. It also makes recommendations for public authorities, especially local and regional authorities on the efficient sorting and recycling of plastic C&D waste.

In addition to the guide, a European seminar was held in April 2006 in Brussels with over 100 participants. The key conclusions from the parties involved were presented and materials were disseminated. These materials can be found on the APPRICOD website.

[19] APPRICOD: Assessing the Potential of Plastics Recycling in the Construction and Demolition Activities (www.appricod.org)

FINANCIAL REPORT

Expenditure by Vinyl 2010, including EuPC and its members amounted to €7.09 million in 2006, up from €4.44 in the previous year.

This considerable increase can be attributed to 2 factors:
- The doubling of recycled quantities due to the success of Vinyl 2010 initiatives.
- Significant subsidy investment for improving Vinyloop® technology plus a subsidy to CIFRA for recycling PVC rigid film from cooling towers.

Vinyl 2010 - Waste Management Projects **Total expenditure including EuPC and its members**

Figures in 1,000s Euros	**2006**	**2005**
ACR+/APPRICOD	16	32
Enlargement project	1	46
Enlargement seminar	0	19
EPCOAT	292	155
EPFLOOR	740	691
EPPA	794	1,097
ERPA/CIFRA	250	1
ESWA Roofcollect	499	276
Halosep®	21	39
Light concrete Italy*	-10	30
Recovinyl	2,910	1,402
RGS 90 Stigsnaes	0	1
Studies	14	146
Synergy Project Germany	85	0
TEPPFA	475	505
Vinyloop® Ferrara	1,000	0
Total	**7,087**	**4,440**

* The small negative figure corresponds to the reimbursement of unused funds at the end of the project

VERIFICATION STATEMENTS

KPMG CERTIFICATION OF EXPENDITURE

Report of the Auditor on the statement of supported charges for Project Vinyl 2010 during the period between 1st January 2006 and 31st of December 2006

We are reporting to you on the completion of the mission, which you have entrusted to us. We have performed a verification of the table presenting the supported charges for the different projects of Vinyl 2010, as included in the Vinyl 2010 Progress Report related to the activities of the year 2006.

Total of supported charges related to the different projects of Vinyl 2010 amounts to K€ 7.087.

The persons responsible for establishing the table presenting the supported charges for the different projects of Vinyl 2010 have provided us with all explanations and information which we required for our audit. We examined evidence supporting the amounts in the statement. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the statement as per 31st December 2006 presents fairly the position of supported charges for the different projects of Vinyl 2010 during the period between 1st January and 31st of December 2006.

Klynveld Peat Marwick Goerdeler Réviseurs d'Entreprises

represented by
Dominic Rouselle,
Partner

Louvain-la-Neuve, March 27, 2007

KPMG CERTIFICATION OF TONNAGES

Cvba Klynveld Peat Marwick Goerdeler Advisory Scrl

Report of the independent expert concerning the audit of the tonnages post-consumer PVC waste collected and recycled in 2006 by the sector groups EPCoat, EPFLOOR and EPPA of the EuPC, by the sector associations ESWA & TEPPFA of the EuPC and by the subsidized recycling plants CIFRA and Vinyloop® Ferrara and by Recovinyl Inpa during the period between 1st January 2006 and 31st of December 2006.

In accordance with the assignment, which was entrusted to us by Vinyl 2010, we give an account of our audit of the following tonnages for the different projects of Vinyl 2010 mentioned in the Vinyl 2010 Progress Report related to the activities of the year 2006.

The conclusions of this audit are summarized in the below-mentioned overview:

Project	Type of PVC post-consumer waste	Tonnage recycled in 2005	Tonnage recycled in 2006	Increase %
EPCOAT	Coated fabrics	1,346*	2,804**	108.32%
EPFLOOR	Flooring	1,728*	1,776**	2.78%
EPPA (incl. Recovinyl and Vinyloop® Ferrara)	Window profiles & Window-related profiles	20,168	37,066	83.79%
ESWA (/Roofcollect)	Flexible PVC	757*	10,504**	1,287.58%
TEPPFA (incl. Recovinyl)	Pipes & fittings	8,802	10,841	23.17%
Recovinyl (incl. CIFRA)	Rigid PVC film	359	1,641	357.10%
Recovinyl and Vinyloop® Ferrara	Cables	4,414	18,180	311.87%
Additional volumes declared by recyclers but audits were not executed		1,219	0	n.a.
Total		**38,793**	**82,812**	**113.47%**

* Tonnage including Switzerland ** Tonnage including Norway and Switzerland

n.a. Not applicable

Remark:
The additional volumes declared by recyclers regarding 2005 have been included in the above-mentioned overview *only for informative purposes.*

The persons responsible for establishing the table presenting the supported tonnages for the different projects of Vinyl 2010 have provided us with all explanations and information which we required for our audit. Based on our review of the information provided, we believe that all waste that was taken into account was non regulated post-consumer PVC waste, according to the Vinyl 2010 definition of non regulated post-consumer PVC waste and that we have not recognised any elements which are of nature to influence significantly the presented information.

Cvba Klynveld Peat Marwick Goerdeler Advisory Scrl

represented by
Ludo Ruysen,
Partner

Brussels, April 11th 2007

DNV VERIFICATION STATEMENT – PROGRESS REPORT 2007

DET NORSKE VERITAS (DNV) IS AN INDEPENDENT FOUNDATION ESTABLISHED IN 1864 WITH THE OBJECTIVE OF SAFEGUARDING LIFE, PROPERTY AND THE ENVIRONMENT.

DNV was for the sixth time commissioned by Vinyl 2010 to provide an independent verification of the 2007 Progress Report. The 2007 Progress Report presents the achievements made by the Vinyl 2010 project in 2006 related to the 10-year programme.

The purpose of the verification was to check the statements made in the report. This verification statement represents our independent opinion. DNV was not involved in the preparation of any part of the Progress Report or the collection of information on which it is based.

Verification Process

The verification consisted of checking whether the statements in the Report give an honest and true representation of Vinyl 2010's performance and achievements. This included a critical review of the scope of the Progress Report and the balance and the unambiguity of the statements presented.

The verification process included the following activities:

- Desk-top review of project-related material and documentation made available by Vinyl 2010 such as plans, agreements, minutes of meetings, presentations and more.
- Communication with Vinyl 2010 personnel responsible for collecting data and writing various parts of the report, in order to discuss and substantiate selected statements.

The verification did not cover the following:

- The underlying data and information on which the desk-top review documentation is based.
- The conformity of the tonnage of PVC waste recycled according to the tonnage verified by KPMG.
- The Financial Report (verified by KPMG).
- Certifications provided by KPMG.

Verification Results

It is our opinion that the 2007 Progress Report represents Vinyl 2010's achievements in 2006 in a fair and honest way. The report reflects in a balanced way the PVC industry's effort to comply with their revised commitments in the Voluntary Commitments of the PVC Industry of May 2006.

The Voluntary Commitment document which was signed in year 2000 has now been revised. An updated version was published in May 2006 to take into account the enlargement of EU, new recycling targets, and an extended commitment on lead stabilisers.

Vinyl 2010 is practicing a life-cycle approach to environmental sustainability covering the stages from production to waste disposal. This is supported by the completion of the Eco-Profiles for PVC providing an important basis for improving the environmental effort within the PVC industry. To further support this work, an Environmental Declaration providing environmental impact data is under development. This is expected to be finalised in 2007.

After years of work, the publication of the Best Available Reference Document on Best Available Techniques in the Production of Polymers (BREF) in October 2006 was a milestone in the environmental sustainability programme.

Many of the targets for 2006 are achieved, and it must be mentioned that strong performance has been demonstrated with the collected recycled tonnages of PVC waste. The Recovinyl project has been a particular success with its impressive increase in the amount of collected PVC waste. This project together with the different sector projects shows good progress is achieving the target for the year 2010.

The target to perform an audit to confirm the phase-out of lead stabilisers from the production of drinking water pipes has also been achieved, which brings the stabiliser producers closer to the 2010 target to reduce the overall use of lead by 50%.

In the seventh year of the 10-year programme, Vinyl 2010 shows, through an extended effort and involvement of resources, good performance within environmental sustainability and the industry demonstrates good progress towards achieving its target for 2010.

We honour Vinyl 2010 for their continuous effort and good performance on the way to achieving the long-term goals of 2010, and we can not see any reason that these goals will not be achieved.

Birgit Hammerseng,
Project Manager

DNV VERIFICATION STATEMENT – PHASE-OUT OF LEAD STABILISERS FROM DRINKING WATER PIPES

Framework

DNV has been engaged by Vinyl 2010 to verify TEPPFA (The European Plastic Pipes and Fittings Association) company members' compliance with their commitment to phase out lead stabilisers from the production of drinking water pipes by the end of 2005. The TEPPFA company members' Commitment applies to all companies in the EU-15 except for Greece, Portugal and Spain and is part of the European PVC Industry's Voluntary Commitment which is implemented through the Vinyl 2010 programme. The member companies producing drinking water pipes are Aliaxis, Alphacan, Dyka, Pipelife, Rehau and Wavin.

Objective

The objective of DNV's work was to verify that lead stabilisers have been phased out from the production of drinking water pipes. The verification statement represents DNV's independent opinion. DNV was not involved in the TEPPFA company members' work in preparing for the lead stabiliser replacement.

Verification Process

DNV performed audits at two randomly-selected TEPPFA company member sites in Germany and the Netherlands out of a total number of 20 sites producing drinking water pipes. The audits were conducted on 13 March and 21 September 2006.

The audits encompassed all states of pipe production, from the feed of raw materials to process control, product control and traceability of finished products. Possible risks of contamination of lead into the drinking water pipes from other sources were considered, e.g. feed of lead stabilisers by mistake, residues of lead stabilisers from the installation due to production of other material produced on the same line as well as a possible content of lead from other components added to the production process.

The following methods were used at the two sites audited:

- Interviews with key personnel involved in the lead stabiliser replacement programme, production process, operating activities, laboratory routines and management system.
- Inspection of the production installations and facilities.
- Review of relevant documentation and records.
- Pipe material from the ongoing production, one from each site, was collected for analysis of the lead content. The sampling was carried out in the presence of the DNV auditor. The analyses were conducted by a recognised laboratory selected by DNV.

In addiction, all the TEPPFA company members' CEOs have produced written statements confirming that the use of lead stabilisers have been phased out from the production of drinking water pipes as of 1 January 2006. This applies to all the plants except for the plants in Greece, Portugal and Spain which are not yet committed.

Verification Results

It is DNV's opinion that lead stabilisers were not used in the production of drinking water pipes at the two sites visited at the time of the audit, and it is our impression that the lead replacement programme has been implemented at these sites. Furthermore, the statements from the CEOs of the remaining sites indicated that the phase-out had been carried out by 1 January 2006.

The fact that the lead stabilisers were not used at the time of the audit was confirmed by the laboratory results. The traces of lead in some of the samples indicated a certain amount of unavoidable contamination, but compared with pipes based on lead stabilisers the amount of lead is negligible. The levels are therefore within the level of what is expected for the production processes audited.

The verification showed that good operational practices were in place to avoid lead coming into the production process. We were met with openness and honesty during the audit, and DNV's auditors had access to all the information requested.

Brigit Hammerseng,
Project Manager

VINYL 2010 AND ITS MEMBERS

Vinyl 2010 is the legal entity that provides the organisational structure and financial resources to implement the European PVC Industry's Voluntary Commitment. The Commitment sets out specific targets and initiatives on emissions monitoring during PVC production, the use of additives and, at end-of-life, waste management. It operates through projects covering technology, research, collection and recycling of post-consumer PVC waste and communication to stakeholders.

Vinyl 2010 demonstrates the commitment of the PVC industry to the goals of sustainable development.

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