



*ECVM INDUSTRY CHARTER
FOR THE PRODUCTION OF VCM AND PVC*

ECVM's Contribution To Responsible Care®



INTRODUCTION

Polyvinyl chloride (PVC) is one of the world's oldest plastics and has evolved since the 1940s to become a universally-used, cost-effective, adaptable, safe and environmentally-effective material.

It is a highly efficient converter of raw materials, combining salt and oil to produce a plastic that is specified for a broad range of long and short life applications.

Production processes for vinyl chloride monomer (VCM) and PVC have been continually improved in recent years and their environmental impact steadily reduced. The European PVC industry recognises, however, that further improvements must be pursued and their scope continually reviewed and widened.

The objectives of Members of the European PVC industry are:

- * *To prevent any detrimental effects from their operations and products to the environment or human health, as far as is in their command.*
- * *To comply, as a minimum requirement, with environmental regulations and quality standards laid down by national and international regulatory authorities.*
- * *To achieve a 'closed loop concept' production process, as far as is feasible with practicable technology.*

DIRECTIVES

Operations covered by this Charter include all processing, handling, storage and transport of primary feedstocks and final products (excluding the conversion of PVC resin to the finished article).

All recoverable quantities of VCM and ethylene dichloride (EDC) in waste streams from the production process are recovered and recycled into the process, as far as it is possible with reasonable efforts.

Residual levels of VCM and EDC in waste streams are treated by appropriate technology before these waste streams are discharged into the environment.

Control technology is implemented in VCM/EDC production to eliminate discharge of heavy metals and dioxin-like components to the extent that:

- * Effluent discharge does not result in exceeding established water quality standards.*
- * Contaminant levels in vent-gases do not exceed the European standard for waste incineration.*

All significant outlets for vent-gases and effluents from the production process are kept under surveillance and valued, in order to determine the effectiveness of the control technology and to measure the final discharge of potential contaminants into the environment.

Fugitive emissions are reduced by installing leak-safe technology and by frequent inspections to check the integrity of all relevant sealings. This can be supported by installing fixed monitoring systems for measuring VCM/EDC concentrations.

Liquid chlorinated organic by-products from the production process, if not recycled as feedstock for other chlorination processes, are destroyed with recovery of chlorine in the form of HCl.

Residual levels of VCM in the final PVC product will not exceed the amounts agreed.

THE MEMBERS OF THE EUROPEAN COUNCIL OF VINYL MANUFACTURERS (ECVM),

Accept that all production, manufacturing and disposal processes of modern industrialised society have an impact on the environment. PVC is no exception.

That the European PVC industry's stakeholders have the right to expect that that impact is determined and, if necessary, reduced in order to meet environmental quality objectives within the scope of Best Available Techniques (BAT) experience and resources.

That, as a material whose production, use and disposal continually evolves, stakeholders have the right to expect the industry to be vigilant and forward-looking in ensuring that appropriate objectives are set and met.

That all ECVM Members will share their environmental control 'know how' by bilateral agreement.

Commit to agree priorities for environmental control and improvement to:

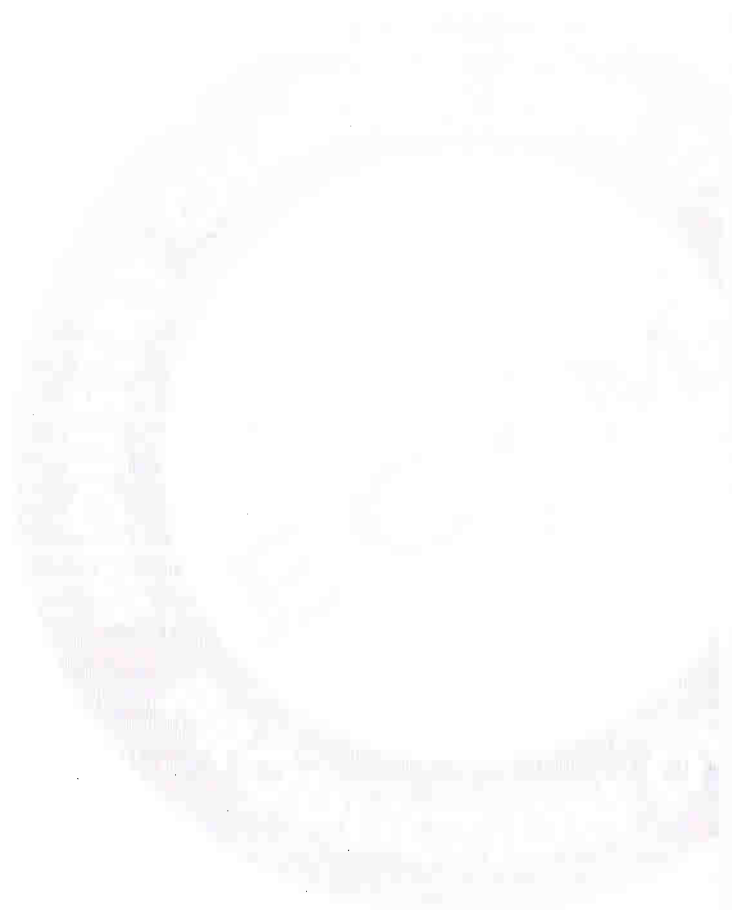
- * Reduce emissions and other environmental pollutants by introduction of voluntary, controlled systems of target-setting, measurement, and operational improvements, setting short, medium and long-term targets that consistently maintain improvements in environmental performance.*
- * Invest in research to pursue future improvements in line with the agreed priorities.*
- * Work in associated industry groups, where appropriate, to improve understanding of shared environmental concern, and to improve processes and technologies to minimise environmental impacts, such as improved recycling and incineration techniques.*
- * Annually review priority standard targets and future areas for action.*
- * ECVM will, at a later stage, include parameters relevant for Emulsion-PVC production.*

To ensure that the environmental control performance, if not made by the national authorities, will be open to review by an independent third party (eg: an accredited environmental verifier according to the rules of the European Union Eco Audit Scheme) subject to specification and agreement between ECVM and Member companies.

To agree that, whereas some companies already comply with the criteria of this Charter, those that do not yet comply will use their best efforts to do so by 1998.

Act to ensure that any ECVM Member which consistently fails to meet agreed industry targets of environmental improvement over clearly defined periods of time, is called to account.

To work with other industry bodies, Non-Governmental Organisations (NGOs), stakeholder groups and other interested organisations to agree common working agendas to improve environmental performance as research, science and technology increase understanding of the relationship between the PVC industry's activities and the needs and concerns of its stakeholder communities.



OUR MEMBERS ARE:

- * **Aiscondel S.A.**
- * **BASF AG**
- * **CIRES S.A.**
- * **Elf Atochem S.A.**
- * **EVC International NV**
- * **LVM NV**
- * **Norsk Hydro ASA**
- * **Rovin v.o.f.**
- * **Solvay S.A.**
- * **Vestolit GmbH**
- * **Vinnolit Kunststoff GmbH**

**ANNEX TO INDUSTRY CHARTER FOR PRODUCTION
OF VCM AND PVC (SUSPENSION PROCESS)**

Reference: ECVM Best Available Techniques

ENVIRONMENTAL STANDARDS FOR EDC AND VCM PRODUCTION

Emission Limits for all Vent-Gases:

- VCM : < 5 mg/Nm³
- EDC : < 5 mg/Nm³
- HCl : < 30 mg/Nm³
- Ethylene : < 150 mg/Nm³
- Dioxin-like components : 0.1 ng/TEQ/Nm³

Discharge Limits for Total of Aqueous Effluents:

- EDC : < 5g/ton of EDC purification capacity
- Copper : < 1g/ton of oxychlorination capacity
- Dioxin-like components : < 1µg TEQ/ton of oxychlorination capacity

**ENVIRONMENTAL STANDARDS FOR PVC PRODUCTION
(SUSPENSION PROCESS)**

- Total VCM-emission from PVC-production : < 100g/ton of PVC
- VCM-concentration in aqueous effluents : < 1 g/m³ of effluent
- VCM-concentration in final regular product : < 5 g/ton of PVC (for general purposes)
< 1 g/ton of PVC (for food/medical applications)



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