

EUROPEAN REGULATORY UPDATE

**VCSA MEETING 1992
BALTIMORE**

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EUROPEAN REGULATORY UPDATE
— SUMMARY OF THE KEY POINTS

- * National SHE legislation now becoming dominated by the increasing influence of the EEC

- * EEC developments of note are legislation concerning Safety Management in general and of specific topics with emphasis on RISK ASSESSMENT rather than prescription ;
legislation concerning ENVIRONMENTAL AUDITING ;
move towards INTEGRATED POLLUTION CONTROL (IPC)

- * TA Luft limit values becoming the "Bible" for air emissions
(but some countries imposing tighter limits)

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Key Figures :

- Any vent of > 25 g/hrflow must be < 5 mg/m³ VCM
- At transition from closed to open process :
 - for mass PVC plant, must be < 0.01 Kg VCM/te PVC
 - for susp. PVC plant, must be < 0.1 Kg VCM/te PVC
 - for copoly. PVC plant, must be < 0.4 Kg VCM/te PVC
 - for emulsion PVC plant, must be < 1.5 Kg VCM/te PVC
- Dust must be < 50 mg/m³ for vent flows > 0.5 Kg/hr
and < 150 mg/m³ for vent flows < 0.5 Kg/hr
- In vents, HCL < 30 mg/m³, CL₂ < 5 mg/m³
and EDC < 5 mg/m³

* EEC monthly average limit for EDC is 6 mg/l in 1993
and 2.5 mg/l in 1995.
(but see detail in note)
Tighter in some countries.

* VCM in occupational environment set by EEC limits
(or tighter)

i.e. 3 ppm annual or 7 ppm over 8 hours.

Excursion/Evacuation levels depend on
time between measurements

e.g. 15 ppm for 1 hour, 20 ppm for 20 mins.

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- * EDC in occupational environment is variable.

Most countries 10 – 20 ppm but some at 50 ppm
and Norway/Sweden at 1 ppm.

Increasing pressure

- * PVC Dust in occupational environment 5 or 10 mg/m³
depending on particle size.

Proposals for significant tightening.

- * Dioxins in incinerator vents 0.1 ng/m³.

Limits being considered for
liquid effluents and sludges.

Oxychlorination and dioxins

- * Incineration is very much an issue.

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REGULATORY ISSUES CONCERNING EDC/VCM IN EUROPE

1. HIGHLIGHTS AND DEVELOPMENTS

EEC LEVEL

- General Safety Management "Framework" Directive and several "Daughter" Directives on a number of particular items have been issued. Implementation 1/1/93. Emphasis on RISK ASSESSMENT and POLICY/PROCEDURES i.e. move towards self-regulation by industry rather than legal prescription.
- Strong moves towards Environmental or ECO Auditing. Emphasis on the management system. Looking similar to Quality Assurance.
- Move toward Integrated Pollution Control (IPC)
- Vast amount of SHE legislation underway

BELGIUM

A new local regulation called "VLAREM" has been prepared by the Flemish authorities and only applying to the Flemish region. This regulation contains standards for VCM and EDC. These standards are since 1/9/91 used for Permits. The "VLAREM"-regulation is based on T.A.-Luft and EEC-Directives.

FRANCE

No national standards, only local regulations.

FRG

- New Regulation for EDC-concentration in occupational areas
 - expected value for EDC 10 mg/m³ air.
- EDC or VCM emission in waste gases shall not exceed 5 mg/m³
- National regulations are being prepared for VCM and EDC concentration in plant effluents.

Following limit concentrations are proposed :

VCM :

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All volatile halogenated hydrocarbons
e.g. VCM max 10 mg/l waste water at each isolated plant boundary.
S, mass and copo PVC 1 mg/l or 5 g/ton prod. cap. daily av. from 1991
E, microsuspension PVC 5 mg/l or 20 g/ton prod. cap. daily av. from 1993

EDC :

All adsorbable organic halogen compounds
e.g. EDC 2 mg/l waste water or 20 g/ton production.

ITALY

DPR203 now implemented specifying emission limits very similar to TA Luft. Mass emission limits (kg VCM/te PVC produced) as the same as FRG.

THE NETHERLANDS

- Expected lowering MAC-value for EDC from 200 mg/m³ to 80 mg/m³ at least.
- Authorities use TA-luft officially as reference but may go beyond.
- Much attention to Dioxin etc. formation in incineration processes.
- In the Dutch OSHA-train the report "Health based recommended occupational exposure limit for Polyvinylchloride (PVC) dust" is in discussion.
- Directive on emissions from waste incineration (old and new installation) will come into force by 30th November 1993. It will exceed the EEC guidelines in the following aspects :

total solids	5	mg/m ³
total heavy metals (Sb + Pb + Cr + Cu + Mn + V + Sn + As + Co + Ni + Se + Te)	1.0	mg/m ³
Cd	0.05	mg/m ³
Hg	0.05	mg/m ³
So _x	40	mg/m ³
No _x	70	mg/m ³
PCDD's + PCDF's	0.1	mg TEQ/m ³

Argument is a.o. regional immission situation.

NORWAY

No national standards. Each plant has got specific limits as a part of the permit to operate the plant and these are still under debate.

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U.K.

- Environmental Protection Act into operation legalising the concept of Integrated Pollution Control to water, air and land.
- Application for authorisation for all existing VCM- and PVC-manufacturing processes required before July 1993. Her Majesty's Inspectorate of Pollution will issue a process guidance note for each process including discharge standards. Authorisation of the process based on using the Best Available Techniques not Entailing Excessive Cost and the Best Available Environmental Option.
- Legislation enacted on the Duty of Care for waste management (cradle to grave type of responsibility)

2. REGULATORY STANDARDS CONCERNING VCM IN EUROPE

2.1. EMISSION LIMITS (AIR)

B Flemish VLAREM < 5 mg/Nm³ when mass flow > 25 g/h

F 0 or 15 ppmv (local regulations)

FRG - < 5 mg/m³ daily average, when massflow > 25 g/h (TA-luft, closed systems).

Transition from the closed to the open system.

- 10 mg VCM/kg PVC maximum monthly average for mass-PVC
- 100 mg VCM/kg PVC maximum monthly average for suspension homopolymer
- 400 mg VCM/kg PVC maximum monthly average for suspension copolymer
- 1500 mg VCM/kg PVC maximum monthly average for microsuspension and emulsion PVC

These regulations of the Federal Law TA-Luft (Technical instructions air) may additionally be tightened by the single states.

For example, in our microsuspension-PVC-plant in Cologne, WACKER has to observe the limit of 450 mg VCM/kg PVC from 1994.

It < 5 mg/m³ when mass flow > 25 g/h (TA-luft). Also note that as both

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VCM and EDC are regarded as carcinogenic, their sum must be < 5 mg/m³.

Neth < 5 mg/m³ av. hour

Nor - < 20 kg VCM/h from old PVC-plant
- < 1,5 kg VCM/h from new PVC-plant (max 3,2 kg/h)
- < 25 kg VCM + EDC/h from VCM-plant

Sw < 0.5 kg/ton (S-PVC) and < 13 kg/ton (PVC Paste)

UK Proposed limits of 0.1 kg/te PVC for emulsion and 1.5 kg/te PVC suspension. Any vent must be below 5 mg/m³.

Switz The standard of < 0.2 kg/te PVC for suspension plant has now disappeared. Now all vents < 5 mg/m³ if total flow > 25 g/hr.

2.2. DISCHARGE LIMITS (WATER)

B Total halogenated organics 15 mg/l CL (reference volume of water 1.1 m³/ton installed prod. capacity)

F Not specific, COD < 15 mg/l

FRG No legal standards at present, but expected to come

It Sum chlorinated hydrocarbons < 1 mg/l (Venice lagoon < 0.05 mg/l)

Neth Not in discussion

Nor New PVC-plant < 67 kg VCM/week (max 40 kg/h)
< 1400 kg TOC/week
PVC/Suspended solids to be decided (max 2,5 kg/h)

Sw 300 kg/year

UK < 1 mg/l (expected)

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GR Sum chlorinated hydrocarbons < 2 mg/l

Switz < 0.1 mg/l VCM (as CL)

2.3. ENVIRONMENTAL QUALITY STANDARDS (AIR)

B VLAREM : 10 micro g/m3 limiting value
1 micro g/m3 target (strive) value
as 98-percentile of all measured half-hour values over 1 year

F Nothing at border of plant

FRG Nothing

It Nothing

Neth 0,38 ppb year average (strive value)

Nor Nothing

Sw 1 -2 ppb advise

UK Nothing (yet)

Gr Nothing

2.4. STANDARDS FOR OCCUPATIONAL ENVIRONMENT

B 3 ppmv max. average year, evacuation when 15 ppmv max/1 hr av ;
20 ppmv max/ 20 min av. ; 30 ppmv max/2 min av.

F 3 ppmv (old plants), 1 ppmv (new plants)

FRG 3 ppmv max TWA (8 hrs), old plants
2 ppmv max TWA (8 hrs), new plants evacuation. See B

It EEC Limits i.e. Technical Long Term Limit Value (1 year) is 3 ppm. Remedial action if 1 reading over 15 ppm. Evacuation if over 30 ppm. (For continuous monitoring systems of 1 analysis every 20 mins., the annual limit of 3 ppm is considered respected if in the year there are less than 1314 readings of over 7.9 ppm.)

Neth 3 ppmv year average, 15 ppmv max/1 hr av ; 20 ppmv max/20 min av ; 30 ppmv max/2 min av.

Nor 1 ppmv (8 hour day)

Sw 1 ppmv TWA (8 hrs), 5 ppmv TWA (15 min)

UK 3 ppmv year average, 7 ppmv (8 hrs av), remedial action if 15 ppm/1hr or 20 ppm/20 min or 30 ppm/2 min i.e. EEC Directive

GR EEC Directive 78/610 as state law

Switz 2 ppm MAK (8 hrs) ; remedial action required if two consecutive readings above 10 ppm or one above 15 ppm

3. REGULATORY STANDARDS CONCERNING EDC IN EUROPE

3.1. EMISSION LIMITS (AIR)

B VLAREM < 20 mg/Nm³ when mass flow > 100 g/h

F

FRG < 20 mg/m³ av. daily concentration with a mass flow of > 0.1 kg/hr (TA Luft)

It < 5 mg/m³ when mass flow > 25 g/h. Also note that as both VCM and EDC are regarded as carcinogenic, their sum must be < 5 mg/m³.

Neth < 5 mg/m³ av. hour

Nor < 25 kg/h (VCM plant, VCM + EDC), < 1 kg/hr (offgases from incinerator EDC/EC/VCM), also a limit on dioxin

Sw Incinerator required for all EDC-containing gases

UK Proposed limit of 20 mg/m³ if mass flow above 100 g/hr.

Gr

3.2. DISCHARGE LIMITS (WATER)

B VLAREM : implementation now of EEC 1995 limits (see later).
Reference volume of 2,5 m³ water/ton production capacity of EDC.

F 10 mg/l monthly av.

FRG No legal standards at present, but expected to come

It EEC limits adopted (see below)

Neth EEC limit values have been adopted.

Nor < 1.75 kg/wk, 0.35 mg/l. Limits also on Fe, Cu, NaOCl, CO, NOX, pH
and dioxins

Sw < 1.000 kg/year

UK Limits set locally based on EEC limits

Gr Sum chlorinated hydrocarbons < 2 mg/l

3.3. ENVIRONMENTAL QUALITY STANDARDS (AIR)

B 10 ppm (40 mg/m³)
Ref. Acceptable Limits for hazardous substances.
TLV's 1991 - 1992 (C.E.D. SAMSON)

Neth 1 ppm advise

Sw 100 - 150 ppb advise

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Nor Proposal for total hydrocarbons 100 - 200 micro g/m3 (1 hour)

3.4. STANDARDS FOR OCCUPATIONAL ENVIRONMENT

B 50 ppmv (TWA)

F

FRG 20 ppmv, in discussion, probably 3.5 ppmv TWA

It 10 ppmv (TLV and TWA)

Neth 50 ppmv (TWA)

Nor 1 ppm TWA (8 hrs)

Sw 1 ppmv TWA (8 hrs), 5 ppm TWA (15 min)

UK 10 ppm (8 hrs av.), 15 ppm (10 min av.)

3.5. EEC GUIDELINES (1990) FOR AQUEOUS EFFLUENTS

Limit values for discharge of 1,2-dichloroethane

<u>Type of Plant</u>	<u>Type of Average</u>	<u>Limit Values expressed in :</u>		<u>Applicable from :</u>
		<u>Weight</u> (g/ton)	<u>Concentr.</u> (mg/l)	
a) Installation for production of EDC	Month	4 2.5	2 1.25	1.1.1993 1.1.1995
	Day	8 5	4 2.5	1.1.1993 1.1.1995
b) Installation for production of EDC and conversion of EDC into VCM on the same site	Month	12 5	6 2.5	1.1.1993 1.1.1995
	Day	24 10	12 5	1.1.1993 1.1.1995

Ton = production - capacity of EDC incl. recycle EDC.

4. PVC-UPDATES - PLASTIC WASTE MANAGEMENT

EEC LEVEL

A modified version of what was called the "final draft, dated 21.2.92" of the Council Directive on Packaging and Packaging Waste was presented by DG XI to the Commission and adopted on 15.7.92. It has now simultaneously been passed on to the European Parliament and the Council of Ministers to take the next step in the approval process.

Key elements are :

- * 10 years after adoption (by year 2003 ?)
 - recovery : 90 % per material
 - of which is recycling : 60 % per material
 - disposal of residues : max. 10 % per material
- * "Intermediate targets" for those countries without fixed schemes
 - recovery : 60 % per material
 - of which is recycling : 40 % per material
 - disposal of residues : max. 40 % per material
- * "Recovery" = reuse, recycling and energy recovery
"Recycling" = recovery for the original purpose or other purpose, excluding energy recovery
- * If scientific research, such as ecobalances, prove that other recovery processes show greater environmental advantages, the target for recycling can be modified.
- * No discrimination between competing materials, collection and recovery methods.
- * No standstill in packaging waste output.
- * Member states have to harmonise their individual schemes over the next 10 years towards the recovery targets mentioned above. Obligation to notify any proposed measure or voluntary agreement under other Community legislation.

AUSTRIA

- Industry taking legal action against Greepeace anti-PVC publicity
- no ban on PVC-packaging expected for the moment
- waste bill draft revised with emphasis on reduction and recycling
- recycling companies started for PVC and expanded PS

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SWEDEN

- Pressure against use of PVC fairly moderate
- Proposal to forbid use of PVC for foodpackaging has been withdrawn
- Combustion of PVC in municipal waste is no longer an issue

UK

A senior official of the DTI presented at Davos 1992 the plans of the UK government for waste management, particularly on packaging. These are not yet "consolidated", but a target of 50 % by the year 2000 for recyclable household waste, of which used packaging is a major share, was put forward. A separate target for energy recovery is still to be fixed. Interestingly, it is the DTI = Department of Trade and Industry which deals with waste handling and the setting of recycling targets, and not the DOE = Department of Environment. Several plastics recycling plants are in operation.

FINLAND

Agreement within packaging industry to decrease PVC-consumption is difficult to put into practice. Minister of Environment accepted that substitution must mean an improvement in environmental performance.

GREECE

PVC waste is considered by Greek Law as normal industrial waste. The law requires disposal to be made in certain landfills for solid industrial wastes under state supervision/control. Above state landfills have not been arranged yet.

SWITZERLAND

Despite pressure from the EEC concerning violation of the "free trading agreement" and the spirit of the "European Economic Area", the Swiss Federal Government in its judgement of 7/7/92, have rejected the appeals of the PVC industry and have gone ahead with its ban on PVC for drink containers (as part of implementing their waste management act). As in Germany and Austria, some Swiss cantons are putting forward "PVC free" purchase lists. Recycling projects in progress.

Incinerator guidelines in EEC are for 0.1 ng/m3 of dioxins TEQ.

- Mandatory deposit on plastic bottles
- Constitution of a committee of the Federal Government and the States (BLAU) with aim to prepare a policy towards PVC.
- Many new recycling projects including chemical recycling.

ITALY

- Public climate worsening
- Packaging waste management law (no 475) being implemented. Also new decree to allow certain wastes to be classified as secondary raw materials and recycled.
- National consortium of public bodies, industry and trade for collection and recycling of waste packs and for every type if recycling a minimum is fixed : for plastics 40 % min., in period 1990 - 1992. Financial resources 10 % of cost of raw materials. If target is not reached, containers will be taxed

THE NETHERLANDS

- Short product life application of PVC (a.o. packaging) under strong attack
- Recycling project developing
- Covenant on packaging between packaging industry and government :

. Packaging waste		in 2000	90 % of 1986
. Recycling in 1995	40 %	in 2000	60 %
. Landfill in 1995	40 %	in 2000	0 %
. Incinerator		in 2000	max 40 %

NORWAY

PVC has been heavily debated, partly due to Norsk Hydro planning a new PVC plant. The Norwegian Ministry of environment has established a PVC policy. They have concluded that the main environmental problems related to PVC is waste and some of the additives. As a consequence of this they invite the industry to prepare plans for phasing out PVC-packaging. The Norwegian Environmental Agency will appoint a group to study the environmental impact of PVC products with long product life compared to alternative materials/products. Life cycle analysis, labelling and recycling. But environmental impact of production is also a strong issue. Norsk Hydro and Statoil have decided to build a plant for recycling of mixed plastic waste.

BELGIUM

- Collection system for plastic bottles in operation (Flemish and Wallonian region).
- Consortium of public bodies industry and trade for collection, separation and recycling of waste packs in Flemish Brabant (1.000.000 inhabitants).
- Collection and recycling of mixed plastics household waste in Limburg and the Campine (300.000 inhabitants).

DENMARK

Voluntary PVC-agreement between government and industry :

- . PVC-waste not incinerated together with ordinary waste ;
- . PVC-waste shall be recycled instead of dumped ;
- . Reduction in use of lead stabilisers and chloroparaffins in PVC ;
- . Environmental assessments according to "cradle to grave principle" ;
- . Targets for PVC-packaging, recycling of PVC-building products.

FRANCE

- Ecologist groups and industry worked together in collection scheme for (PVC-) bottles (operation Pelican, school program)
- Dunkerque : 80 % return of PVC-bottles
- April 1992 decree on the waste management of used packaging (reduced landfill, recycling, acceptability of thermal recovery, etc)

FRG

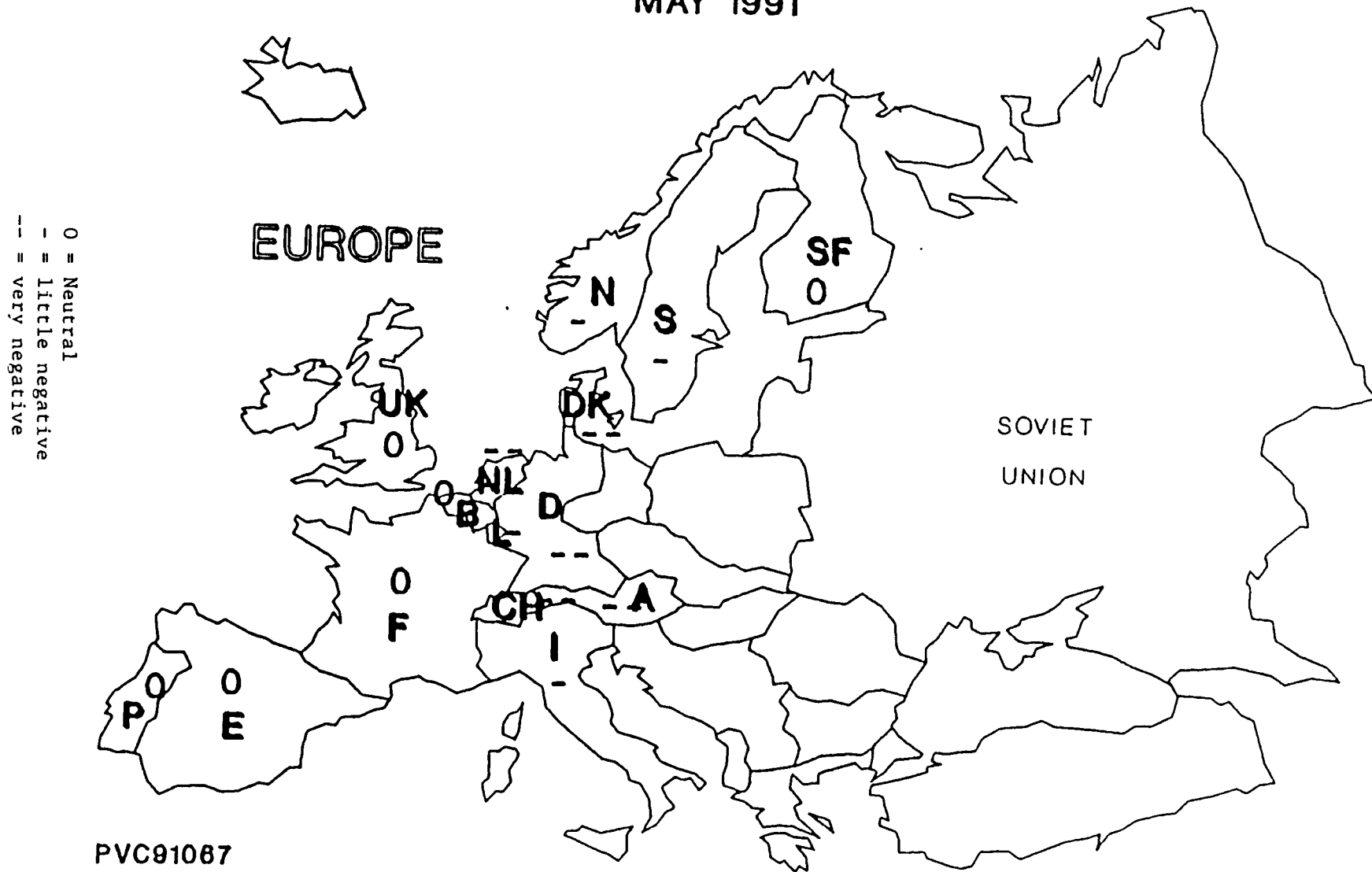
- Recycling scheme for PVC-flooring in action since December 1990 by PVC-flooring producers ; target is to recycle 300 T till end of 1991.
- PVC less discussed than before, much attention for recycling but in some federal states pressure and action for total prohibition of use/application of PVC (Green Party conservative party). PVC products increasingly threatened by purchasing policy of some states.
- Targets for plastics packaging officially approved :
 - . 01.01.93 collecting 30 % recycling 10 %
 - . 01.01.95 collecting 80 % recycling 64 %

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PVC AND ENVIRONMENT

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