FOREWORD INTRODUCTION

2-BUTENE

CAS N°: 107-07-7

Substance

End Point	:	**IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES**
Chemical Name	:	**2-Butene**
Common Name	:	**2-Butene**
CAS Number	:	**107-01-7**
RTECS Number	:	**EM2932000**

Synonyms

.beta.-Butene **.beta.-Butylene**
Pseudobutylene

Properties & Definitions

Molecular Formula	:	**C4H8**
Molecular Weight	:	**56.1**
State	:	**Gas**
Octanol/Water Partition Coefficient	:	**log Pow = 1.85**
Impurities	:	**In Dow Europe product: n-butane 1.11 vol%; 1-butene 0.935 vol%; isobutylene +/-200 volppm; ethylacetylene <20 volppm; 1,3-butadiene 240 volppm. In shell product: n-butane 41.3%; isobutylene 0.4%; C5 0.4%.**
Definitions	:	**Composed of two structural formes: trans-2-butene and cis-2- butene 100% 2-butene = 70% cis and 30% trans.**

Overall Evaluation

SIDS INITIAL ASSESSMENT

This chemical is presently of low priority.

SUMMARY OF REASONS SUPPORTING THE RECOMMENDATION

2-Butene is manufactured in a closed system and used in the production of gasolines, butadiene and other chemicals. Based upon the available information, the initial assessment gave indications for concern at peak concentration for humans and no indications for concern for the aquatic environment.

However, the assessment is considered to be limited by:

- the available exposure data concern only one site in the Netherlands.
- no exposure data for 2-butene per se were available; but only as a part of total C4 chemicals.

Production-Trade

Chemical Name : **2-Butene**
CAS Number : **107-01-7**
Geographic Area : **EUR**
Area Specifications : **W**

Production

Quantity *Year*

20000 T - P/Y

General Comments : No information for other production site.

References

!SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

#DOWEU*
Dow Europe, Unpublished Report or Communications, (1992)

Uses

Chemical Name : **2-Butene**
CAS Number : **107-01-7**
Geographic Area : **EUR**
Area Specifications : **W**

Use

Quantity	*Year*	*Comments*
2000-20000 T	**1992**	Used in the production of gasolines, butadiene and other chemicals.

References

Secondary References : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)

Study

End Point : **Pathway into the Environment and Environmental Fate.**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Test Method and Conditions

Test method description : Fugacity model, Mackay level 1

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
(Calculated)	**to AIR**	**99 %**			
(Calculated)	**to AQ**	**<0.1 %**			
(Calculated)	**to SOIL**	**<0.1 %**			
(Calculated)	**to SED**	**<0.1 %**			
(Calculated)	**to FISH**	**>0.1 %**			
		>0.1 %			

More than 0.1% in suspended matters (calculated value). From these calculations it can be concluded that almost all 2-butene will partition into the atmosphere.

General Comments : Based on emissions from cracking installations for the production of other chemicals e.g. ethene, butadiene and propene, an emission factor of 0.02% and 0.2% was estimated for production and processing respectively.

References

Primary Reference : **CMSHAF**
Mackay, M., et al. Chemosphere. Chemistry, Biology and Toxicology as related to Environmental Problems, 23(6), 695-717, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : **Pathway into the Environment and Environmental Fate.**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Test Method and Conditions

Test method description : Screening Assessment Model System (SAMS) Plume model.

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR				

Concentration: 4.84E-11mg/m3 (330m from the emission point, height 50m) calculations based on plume model.

References

Primary Reference : **OECDM***
OECD Screening Assessment Model System (SAMS), (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 6, (1993)

Study

End Point : **Pathway into the Environment and Environmental Fate.**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Pathway and Transport

Pathway : **AIR**
Pathway description : Evaporation

Quantity Transported

Medium	*to Medium*	*Quantity*	*Time*	*Year*	*to Year*
	to AIR	**4.2 %**			

Evaporation from gasoline fuel tank: 4.2 vol% of total evaporated hydrocarbons.

	to AIR	**0.2-0.3 %**			

Evaporation from carburator: 0.2-0.3 vol% of total evaporated hydrocarbons.

	to AIR	**0.6 %**			

In exhaust of diesel engine: 0.6% of emitted hydrocarbons.

References

Primary Reference : **HBEDC***
Verchueren, K. Handbook of Environmental Data on Organic Chemicals, (1987)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point	:	**HUMAN INTAKE AND EXPOSURE**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*
HUMAN			**IHL**		

Species/strain/system : Average exposure 8hours. Exposition due to leaking in craking installations and during transport.

Test Results

Intake	*Spec.*	*Date*

11.5 mg/m3
EHE max (maximum estimated human exposure) = 5ppm or 11.5 mg/m3 equivalent to the peak concentration at working place.

<0.23 mg/m3
TWA (time-weighted average) at working place or EHE mean <0.1ppm, (calculated).

General Comments : EHE based on measurement of C4 chemicals.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 5, (1993)

Study

End Point	:	**PHOTODEGRADATION**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**
Study type	:	**LAB**
Medium	:	**AIR**

Test Method and Conditions

Test method description	:	Unknown
Temperature	:	**27 C**

Test Results

Quantity		*Time*	*Comments on result*
50 %	LOSS	**0.3 h**	T/2 with NO
50 %	LOSS	**10-11 mi**	T/2 with NO2. The reported time is 0.17 hours.

General Comments : Levels of 2-butene in air will be low due to the rapid photodegradation.

References

Primary Reference :

ESTHAG

Dilling, W. L., et al. Environmental Science and Technology, 10(4), 351-356, (1976)

Secondary Reference :

!SIDSP*

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point	:	**PHOTODEGRADATION**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**
Study type	:	**LAB**
Medium	:	**AIR**

Test Substance

Description of the test substance	:	cis-2-Butene and trans-2-butene

Test Method and Conditions

Test method description	:	Unknown
Temperature	:	**25 C**

Test Results

Quantity	Time	Comments on result
		Reaction with hydroxyl radicals both measured at 25C. Reaction constants are: cis-butene: k = 5.6E-5/s, trans-2-butene: k = 6.4E-5/s. At lower temperatures reaction constants will be higher.

References

Primary Reference : **CHREAY**
Atkinson, R. Chemical Reviews, 85, 69-201, (1980)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point	:	**HYDROLYSIS**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**
Study type	:	**LAB**
Medium	:	**AQ**
Specifications	:	**FRESH**

Test Substance

Description of the test substance	:	cis-2-Butene and trans-2-butene

Test Method and Conditions

Test method description	:	Unknown

Exposure

Dose / Concentration	:	The release of both isomers from an aqueous solution was tested at 5 concentrations.

Test Results

Quantity	*Time*	*Comments on result*
700 mg/l	**3 h**	After maximum 3 hours, the observed levels showed a decrease from 700mg/l to <1mg/l (detection limit). DT5O is 5-25 minutes, depending on the concentration tested (at ambient temperature).

References

Primary Reference	:	**#DOWEU*** Dow Europe, Unpublished Report or Communications, (1992)
Secondary Reference	:	**!SIDSP*** OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point : **MAMMALIAN ACUTE TOXICITY**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
MOUSE			**IHL**	**ADULT**		**LC50**	Mouse inhalation LC50 was estimated as 977mg/m3.

References

Primary Reference : **RTECS***
Anonymous. Registry of Toxic Effects of Chemical Substances, (1986)

Secondary Reference : **SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point : **MAMMALIAN ACUTE TOXICITY**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Exposure Period : **4 h**

Test Method and Conditions

Test method description : OECD No. 403, GLP : yes.

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
RAT			**IHL**	**ADULT**		**LC50**	Rat inhalation LC50 was estimated as >23.1g/m3.

References

Primary Reference : **#RHVTDT**
Arts, J. H. E. TNO Central Institute for Nutrition and Food Research Report-Netherlands Organization for Applied Scientific Research, Division for Nutrition and Food Research, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point : **MAMMALIAN TOXICITY**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**	**ADULT**	**M**		
					F		

Species/strain/system : Wistar albino (Hsd/Cpd: WU)

Test Substance

Description of the test substance : 2-Butene (cis-2-butene 42.4%, trans-2-butene 55.3%)

Test Method and Conditions

Test method description : OECD Combined Repeated Dose Reproductive/Developmental Toxicity Screening Test. GLP: yes.

Exposure

Exposure Period : **39-46 d**
Frequency : **6 h/d**
7 d/wk
Dose / Concentration : **5.7-11.5 g/m3**
Exposure comments : Doses were 0, 5.7, and 11.5g/m3.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	NEF				

No Adverse Effect Level (NOAEL) was at the dose level of 5.7g/m3.

BW	**DECR**			**F**	

Body weight decrease was observed at the dose level of 11.5g/m3.

	BEHAV			**F**	

Food consumption was decreased at the dose level of 11.5g/m3.

BLOOD	**BIOCH**			**M**	

At the dose level of 11.5g/m3 calcium levels of blood plasma were decreased.

General Comments : Estimated dose of low concern (EDLC) was calculated as = 11.4mg/m3 using an uncertainty factor of 500.

References

Primary Reference : **#RHVTDT**
Waalkens Berendsen, D. H. and Arts, J. H. E. TNO Central Institute for Nutrition and Food Research Report-Netherlands Organization for Applied Scientific Research, Division for Nutrition and Food Research, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 7, (1993)

Study

End Point : **MUTAGENICITY**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
BACT			**VTR**				

Species/strain/system : Salmonella Typhimurium TA98, TA100,TA1535,TA1537

Test Method and Conditions

Test method description : OECD No. 471; Safefarm definitive protocol Tx 3569(amended). GLP: yes.

Exposure

Exposure Period : **10-80 %**
Exposure comments : Doses of 10, 20, 40, 60, or 80% tested with and without metabolic activation. Positive control with and without S9 mix were included. Negative control: clean, dry air. 2 replicates.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	NEF				

Negative results with and without metabolic activation.

CHNG

Minimum concentration at which toxicity to bacteria was observed is 60%.

References

Primary Reference : **#URSPH***
Thompson, P. W. Unpublished Report - Safepharm, 44/182 D.D. 6-04, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 8, (1993)

Study

End Point	:	**MUTAGENICITY**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**
Study type	:	**LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**VTR**				

Species/strain/system : Rat lymphocytes

Test Substance

Description of the test substance : cis-2-Butene 42.2% and trans-2-butene 55.3%.

Test Method and Conditions

Test method description : OECD No: 473; Safefarm definitive protocol Tx3570 (amended). GLP: yes.

Exposure

Exposure Type	:	**SHORT**
Dose / Concentration	:	**40-60 %**
Exposure comments	:	Concentrations: 40, 50, or 60% of cis-2-butene and trans-2-butene mixed with dry air. Positive control: -S9 mix: (EMS). Positive control: +S9 mix: cyclophosphamide (CP), vinylchloride 50%. Negative control: clean dry air. Harvest time 20, 30 hours.

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
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	CELL				

Lowest concentration producing cell toxicity: > 60% with and without metabolic activation.

NEF

Genotoxic effect was absent with and without metabolic activation under the test conditions.

References

Primary Reference : **#URSPH***
Unpublished Report - Safepharm, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 12, (1993)

Study

End Point : **REPRODUCTION**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**
Study type : **LAB**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
RAT			**IHL**		**M**		
					F		

Species/strain/system : Wistar albino rats (Had/Cpd: WU)

Test Method and Conditions

Test method description : OECD Combined Repeated Dose and Reproductive/Developmental Toxicity Screening Test. GLP: yes.

Exposure

Frequency : **6 h/d**
7 d/wk
Dose / Concentration : **5.7-11.5 g/m3**

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
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NEF

No Adverse Effect Level for the parental generation was reported as = 5.7g/m3.

NEF

No Adverse Effect Level for F1 generation was reported as 11.5g/m3. Effective dose of low concern (repro.) was calculated as = 23mg/m3.

NEF

No effects on the number of pups born, sex, ratio and viability index.

References

Primary Reference : **#RHVTDT**
Waalkens - Berendsen D. H. and Arts, J. H. E. TNO Central Institute for Nutrition and Food Research Report-Netherlands Organization for Applied Scientific Research, Division for Nutrition and Food Research, (1992)

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 8, (1993)

Study

End Point	:	**AQUATIC ACUTE TOXICITY**
Chemical Name	:	**2-Butene**
CAS Number	:	**107-01-7**
Species/strain/system	:	Fathead minnow (Pimephales promelas)
Exposure Period	:	**96 h**

Test Method and Conditions

Test method description	:	Estimation of aquatic effects data for 2-butene using Quantitative Structure-Activity Relationships (QSAR's) using the equation log LC50 = -0.85 log kow - 1.41. Value of log kow = 1.85.

Test Results

Organism	*Medium*	*Spec.*	*Route*	*Lifestage*	*Sex*	*Effect*	*Effect Comments*
FISH	**AQ**	**FRESH**				**LC50**	LC50 = 58mg/l.

General Comments : QSAR's can be used to estimate the toxicity of a compound. 2-Butene can be classified as an inert chemical which acts by a narcosis-type or baseline toxicity.

References

Secondary Reference : **!SIDSP***

OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : **AQUATIC TOXICITY**
Chemical Name : **2-Butene**
CAS Number : **107-01-7**

Test Subject

Organism	*Medium*	*Specification*	*Route*	*Lifestage*	*Sex*	*Number exposed*	*Number controls*
CRUS	**AQ**	**FRESH**					

Species/strain/system : Water flea (Daphnia magna)

Test Method and Conditions

Test method description : Estimation of aquatic effects data for 2-butene using Quantitative Structure-Activity Relationships (QSAR's) using the equation log EC50 = -0.95 log kow -1.19, and log kow = 1.85.

Exposure

Exposure Type : **ACUTE**
Exposure Period : **48 h**

Test Results

Organ	*Effect*	*Rev.*	*OnSet*	*Sex*	*Affected in Exposed - Controls*
	EC50				

EC50 = 63mg/l.

General Comments : QSAR's can be used to estimate the toxicity of a compound. 2-Butene can be classified as an inert chemical which acts by a narcosis-type or baseline toxicity.

References

Secondary Reference : **!SIDSP***
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Substance

Chemical Name :
Reported Name : **2-butene**
CAS Number : **107-01-7**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
DEU	**REG**	**CLASS** **LABEL** **PACK**	**-**	**CLASS** **RQR** **RQR**	CLASSIFICATION AND LABELLING IN GERMANY IS GENERALLY THE SAME AS FOR THE EEC (SEE OJEC** L180, 1991). HOWEVER, SLIGHT MODIFICATIONS MAY BE INTRODUCED FOR SOME SUBSTANCES IN THE GERMAN LEGISLATION. ***Title :*** ORDINANCE ON HAZARDOUS SUBSTANCES. (GEFAHRSTOFFVERORDNUNG) ***Reference :*** **BGZBAD, I, 1931, 1991** ***Effective Date :*** 15JUN1991 **Bundesgesetzblatt. Federal Law Gazette** ***Last Amendment :*** ***Entry / Update :*** APR1992

Substance

Chemical Name :
Reported Name : **2-butene**
CAS Number : **107-01-7**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**AIR**	**AMBI**	**MAC**	3.0MG/M3 1X/D, 3.0MG/M3 AV/D (APPLIES TO BUTENE ISOMERS MIXTURE) ***Title :*** ***Reference :*** ***Effective Date :*** AUG1984 ***Last Amendment :*** **PDKAV*, 3086-84, 1984** ***Entry / Update :*** SEP1985 **PREDELNO DOPUSTIMYE KONTSENTRATSII (PDK) ZAGRYAZNYAYUSHCHIKH VESHCHESTV V ATMOSFERNOM VOZDUKHE NASELENNYKH MEST (MAXIMUM ALLOWABLE CONCENTRATIONS (MAC) OF CONTAMINANTS IN THEAMBIENT AIR OF RESIDENTIAL AREAS)**

Substance

Chemical Name :
Reported Name : **2-butene**
CAS Number : **107-01-7**

Area	Type	Subject	Spec.	Description	Level / Summary Information :
RUS	**REG**	**AQ**	**SURF**	**MAC** **CLASS**	0.2 MG/L (APPLIES TO ALL BUTENE ISOMERS) HAZARD CLASS: III ***Title :*** ***Reference :*** ***Effective Date :*** 1JAN1989 ***Last Amendment :*** **SPNPV*, 4630-88, 1988** ***Entry / Update :*** JUL1990 **SANITARNYE PRAVILA I NORMY OKHRANY POVERKHNOSTNYKH VOD OT ZAGRIAZNENIA (HEALTH REGULATION AND STANDARDS OF SURFACE WATER PROTECTION FROM CONTAMINATION)**

Substance

Chemical Name :
Reported Name : **2-butene**
CAS Number : **107-01-7**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
EEC	**REG**	**FOOD PACK**	**- ADDIT**	**- PRMT**	THIS SUBSTANCE MAY BE USED FOR THE MANUFACTURE OF PLASTICS MATERIALS AND ARTICLES INTENDED TO COME INTO CONTACT WITH FOODSTUFFS. THESE PLASTICS MATERIALS AND ARTICLES SHALL NOT TRANSFER THEIR CONSTITUENTS IN QUANTITIES EXCEEDING 10 MG/DM2 OF SURFACE AREA OF MATERIAL OR ARTICLE (OVERALL MIGRATION LIMIT) OR 60 MG/KG OF FOODSTUFF, FOR CERTAIN CONTAINERS OR SEALING DEVICES. THE BASIC RULES FOR TESTING MIGRATION OF THE CONSTITUENTS OF PLASTICS MATERIALS AND ARTICLES ARE LAID DOWN IN DIRECTIVE 82/711/EEC (OJEC L297,26,1982) AND THE LIST OF SIMULANTS TO BE USED IN THE MIGRATION TESTS IS GIVEN IN DIRECTIVE 85/572/EEC (OJEC L372, 14, 1985).

Title : COMMISSION DIRECTIVE OF 23 FEBRUARY 1990 RELATING TO PLASTICS MATERIALS AND ARTICLES INTENDED TO COME INTO CONTACT WITH FOODSTUFFS (90/128/EEC).

Reference : **OJEC**, L75, 19, 1990** ***Effective Date :*** 31DEC1990
Official Journal of the European Communities
Last Amendment : ***Entry / Update :*** 1991

Substance

Chemical Name :
Reported Name : **2-butene**
CAS Number : **107-01-7**

Area	*Type*	*Subject*	*Spec.*	*Description*	*Level / Summary Information :*
EEC	**REG**	**CLASS LABEL PACK**	**-**	**CLASS RQR RQR**	CLASS: F - HIGHLY FLAMMABLE; EXTREMELY FLAMMABLE LIQUEFIED GAS (R 13). LABEL: F - HIGHLY FLAMMABLE; EXTREMELY FLAMMABLE LIQUEFIED GAS (R 13); KEEP CONTAINER IN A WELL-VENTILATED PLACE (S 9); KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING (S 16); TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGES (S 33). IT SHOULD BE STATED ON THE LABEL WHETHER IT IS A SPECIFIC ISOMER OR A MIXTURE OF ISOMERS.

Title : COUNCIL DIRECTIVE 67/548/EEC OF 27 JUNE 1967 ON THE APROXIMATION OF THE LAWS, REGULATIONS AND ADMINISTRATIVE PROVISIONS RELATING TO THE CLASSIFICATION, PACKAGING AND LABELLING OF DANGEROUS SUBSTANCES

Reference : **OJEC**, 196, 1, 1967** ***Effective Date :*** 1JUL1992
Official Journal of the European Communities
Last Amendment : **OJEC**, L 180, 79, 1991** ***Entry / Update :*** APR1992
Official Journal of the European Communities