



Chemicals & Polymers

ADDITIONAL NOTE TO CERTAIN RECIPIENTS
WITH ASL/VCM REGISTER,
REVIEW DATE 1 JANUARY 1989

RECEIVED

FEB 1989

R. W. FRASE

ICI Chemicals & Polymers Limited

Occupational Health
PO Box 4 Hillhouse Site
Thornton Cleveleys
Blackpool FY5 4QD
Tel (0253) 861444
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Your ref

Our ref BB/BGS

Date Feb 1989

Dear Colleague

I have been asked to make a special request to you, to try and obtain specimens of liver tissue from ASL/VCM cases, and forward them to Professor Tamburro who is looking at research into Oncogenes. His address is :

Professor Carlo H Tamburro, M D
Department of Community Health
School of Medicine, 119A
University of Louisville
LOUISVILLE
Kentucky 40292
U S A

May I thank you in advance for your help.

Yours sincerely

Brian Bennett

Dr Brian Bennett

GENC 008120

1. The first part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system (1) as $t \rightarrow \infty$. It is shown that the solutions of the system (1) are bounded and tend to zero as $t \rightarrow \infty$ if the matrix A is stable. The second part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system (1) as $t \rightarrow \infty$ if the matrix A is not stable. It is shown that the solutions of the system (1) are unbounded and tend to infinity as $t \rightarrow \infty$ if the matrix A is not stable.

DATE	TIME	REPORTED INCIDENT	REPORTED BY	REPORTED TO	REPORTED BY PHONE	REPORTED BY FAX
FEB 10	10:14	REPORTED INCIDENT PO	REPORTED BY	REPORTED TO	REPORTED BY PHONE	REPORTED BY FAX

FACSIMILE TRANSMISSION COVER SHEET

DATE: 5-1-89

TO: RON FRASE
SPRINGSIDE

FROM: ROY JOHNSON Ext. 4343

GenCorp, Inc.
175 Ghent Road
Akron, OH 44313-3300

THERE WILL BE A TOTAL OF 3 PAGES, INCLUDING THIS COVER SHEET. IF YOU
DO NOT RECEIVE ALL 3 PAGES, OR IF THEY ARE NOT LEGIBLE, PLEASE CALL THE
OPERATOR INDICATED BELOW IMMEDIATELY AT (216) 869-4341

NANCY PRATHER
Facsimile Operator

OUR MACHINE IS A RICOH - RAPICOM 120, GROUPS I/II/III - AUTOMATIC ANSWER
THE NUMBER IS (216) 869-4211

THANK YOU

GENC 008122

GENCORP

175 Ghent Road
Fairlawn, Ohio 44313-3300

Tel: 216-869-4200
Fax: 216-869-4211

May 8, 1989

Dr. Brian Bennett
ICI Chemicals & Polymers Limited
Occupational Health
P. O. Box 4 Hillhouse Site
Thornton Cleveleys
Blackpool FY5 4QD
Lancashire, England

Dear Dr. Bennett:

I have just been informed that a person who previously worked at our PVC Resin plant in Ashtabula, Ohio, recently passed away and the diagnosis on the death certificate was "Angiosarcoma." An autopsy has confirmed the cause of death was Angiosarcoma. Based on this information, it would seem that this individual should be added to the World Register of Cases of Angiosarcoma of the Liver.

I will give you the information, as I have it, in the numbered sequence across the top of the log sheet:

1. Country and Reference U.S. No. 36.
2. The individual's name is Joseph R. Succi.
3. His date of birth was September 8, 1921.
4. The name of the company is GenCorp
(formerly The General Tire & Rubber Company).
5. The factory was located at Ashtabula, Ohio.
6. Mr. Succi's first exposure was April 14, 1955.
7. The date of the diagnosis was November 26, 1988.
8. Mr. Succi was age 67 at the time of the diagnosis.
9. Had approximately 33 years of exposure to diagnosis.
10. The plant terminated operations December 31, 1983,
making his years of exposure approximately 28 years.

Dr. B. Bennett
ICI Chemicals & Polymers Limited
Blackpool FY5 4QD
Lancashire, England

May 8, 1989

11. The date of death was January 10, 1989.
12. The histological confirmation is in the form of an autopsy.
13. I have no real way of knowing what his estimated exposure level would be.
14. Mr. Succì started as a maintenance labor trainee, and was a janitor laborer for a short period of time. In December of 1956, he became a shift mechanic, and from February 1959, through his retirement date, he worked basically as an electrician in the plant.
15. Other career highlights - Mr. Succì's official retirement date was January 1, 1984.

If any additional confirming information becomes available, I will forward it to you as soon as possible. If I can be of any further help, please let me hear from you.

Sincerely,

Roy N. Johnson, Director
Corporate Safety, Health &
Environmental Affairs

RNJ:np

cc: R. W. Frase
R. L. Malcolm

CONFIDENTIAL

World Register
of Cases of

ANGIOSARCOMA OF THE
LIVER (ASL)
due to VCM

REVIEW DATE
1st JANUARY 1989

Collated by:

*Dr Brian Bennett
Occupational Health
ICI Chemicals and Polymers Ltd
Hillhouse Site
PO Box 4
Thornton-Cleveleys
Blackpool FY5 4QD
England*

*(Telephone 0253 861632)
(Telex 67483 ICIPLH6)
(Facsimile 0253 861861)*

CIRCULATION OF REGISTER

APPLETON B	ICI Runcorn, UK
BAGSHAW Dr I M M	Hydro Polymers Ltd, Newton Aycliffe, UK
BAND Dr P R	Cancer Control Agency of British Columbia, Vancouver, Canada
BARON Dr C	ICI Runcorn, UK
BARRAT Dr G	AECRP, Commentry, France
BAXTER Dr Peter	University of Cambridge, UK
BAYLAC Dr	Atochem, Chauny, France
BELLECC Dr	Rhone Poulenc, Aubervilliers, France
BENECH Dr M	Naphtachimie, Lavera, France
BENNETT Dr B	ICI Hillhouse, UK
BERTAZZI Dr P	Inst of Occupational Health, Milan University, Italy
BERTUZZI M	EVC, Brussels, Belgium
BEYNON D W S	ICI Runcorn, UK
BISHOP Dr C	EMAS, Cardiff, UK
BORRELLI F E	Georgia Gulf, Delaware City, USA
BRAUN Dr C L J	Akzo, Arnhem, The Netherlands
BREWER Dr M D	Imperial Oil, Sarnia, Ontario, Canada
BRYSON Dr D D	ICI Wilton, UK
BYREN Dr David	Nobel Industrier, Sundsvall, Sweden
CARTER Dr J T	EMAS, London, UK
CATANZARITI A	EVC, Brussels, Belgium
CELLA C	EVC, Brussels, Belgium
CHANCE M	ICI Runcorn, UK
CLARKE Dr E A	Ontario Cancer Foundation, Toronto, Canada
CLAYTON H	Norsk Hydro, Newton Aycliffe, UK
CONTASSOT Dr J C	Atochem, Saint-Fons, France
DAVIES J G	EVC, Brussels, Belgium
DE JONG Dr G	Shell, An Den Haag, Holland
DELORME Dr F	Quebec, Canada
DEPLAN Dr F	Atochem, Jarrie, France
DIETZ Dr H W	B F Goodrich, Akron, Ohio, USA
DOLL Prof Sir Richard	Imperial Cancer Research Fund, Oxford University, UK
DOMBROWSKI S L S	Dow Chemical, Midland, Michigan, USA
DRUMWRIGHT Dr J R	Vista Chemical, Houston, Texas, USA
DUPONT G	APME, Brussels, Belgium
EMMINGER H	VKE, Frankfurt, Germany
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EVANS Dr A E J	Lever Bros, Warrington, UK
FALK, Dr H	Centres for Disease Control, Atlanta, Georgia, USA
FAVRE Dr	Atochem, Montluel, France
FIELDING Miss C	ICI Millbank, London, UK
FILLINGER J	Solvay, Brussels, Belgium
FINCHAM Ms Shirley	Alberta Cancer Board, Edmonton, Canada
FOA Prof V	Inst Industrial Medicine, Milan, Italy
FORMAN Dr D	Imperial Cancer Research Fund, Oxford University, UK
FRASE R W	DiversiTech General, Akron, Ohio, USA
FREIESLEBEN Dr W	ECVM, Brussels, Belgium
FRIEDEL Dr H P	Berufsgenossenschaft der Chemischen Industries, Heidelberg, Germany
GAFFEY Dr W	Monsanto Co, St Louis, Missouri, USA
GOTTESMAN R T	The Vinyl Institute, Wayne, NJ, USA
GROISMAN D	Electrochemical Industries, Acre, Israel
HILLMAN Dr D W	Diamond Shamrock Corp, Dallas, Texas, USA
HOWARD Dr J K	University of Otago School of Medicine, Wellington, New Zealand
HUMPHRY Dr N F	ICI Australia, Melbourne, Australia

JOHNSON Dr C A	Goodyear Tire & Rubber, Akron, Ohio, USA
JOHNSON Roy N	GenCorp, Fairlawn, Ohio, USA
KAIPERT Dr J H	Dow Chemical Europe, Horgen, Switzerland
KLEIN Dr H	Dynamit Nobel, Troisdorf, Germany
LAGAST Dr H	Solvay, Brussels, Belgium
LANHAM Dr John	Dow Chemical, Midland, Michigan, USA
LANOUZIERE Dr Claudine	Solvay, Tavaux, France
LAWRENCE-JONES Sir C	Chief Medical Officer, ICI, London, UK
LEE Dr F I	Victoria Hospital, Blackpool, Lancs, UK
LELBACH Prof Dr WK	University of Bonn, West Germany
LEVEQUE Dr G	CDF Chimie, AZF, Bully-les-Mines, France
LEVISON Prof Dr D A	Guy's Hospital, London, UK
LEWIS Dr P	Chemical Industries Association, London, UK
LIGO Dr R N	Dupont, Wilmington, Delaware, USA
LO MARTIRE Prof N	EniChem, Milan, Italy
LUSS R D	Occidental Chemical, Pottstown, Pennsylvania, USA
LUSSATO Dr Josette	Atochem, Port de Bouc, France
MALTONI Prof C	Institute di Oncologia, Bologna, Italy
MATTIUSI Dr R	Montedison, Milan, Italy
MELTON B	Formosa Plastics, Delaware City, USA
MIDDLETON D	Hydro Polymers Ltd, Newton Aycliffe, UK
MOKKA Mr	Neste Oy, Espoo, Finland
MONTESANO Dr R	IARC, Lyon, France
MOTTI Dr A A	Duperial SAIC, Buenos Aires, Argentina
MUNOZ MOUTON Dr M	Rio Rodano, Madrid, Spain
MacSWEEN Prof RNM	Western Infirmary, Glasgow, Scotland
NAKAMURA Dr S	Japanese PVC Association, Tokyo
OSMAN Dr J	Health & Safety Executive, Bootle, UK
PADDLE Dr G M	ICI Central Medical Group, Alderley Park, UK
PAGLIAUNGA Dr S	Montedison, Novara, Italy
PAQUET Dr Christiane	Atochem, Serquigny, France
PATERSON Dr J C	ICI Runcorn, UK
PIRASTU Dr Roberta	Istituto Superiore di Sanita, Rome, Italy
POSSBERG Dr J	Wacker-Chemie, Munich, Germany
PUECH Dr A M	Atochem, Brignoud, France
PURDHAM Dr J	University of Toronto, Ontario, Canada
RAMBAUD Dr J	RP Recherches, Antony, France
RICHARD Dr A	Rhone Poulenc, Roussillon, France
ROBSON Mrs D	Saskatchewan Cancer Foundation, Regina, Canada
RODRIGUES Dr MJF	ICI, Sao Paulo, Brazil
RUTY Dr J	Atochem, St Auban, France
SALG Dr Joyce A	NIOSH, Cincinnati, Ohio, USA
SCHIPPER Dr H	University of Manitoba, Winnipeg, Canada
SCHUCKMANN Dr F	Hoechst, Frankfurt, Germany
SERONNE Dr D	Diamond Shamrock, Dallas, USA
SHAH Dr Has	CMA, Washington DC, USA
SIGRIST Dr J	Shell Chimie, Berre L'Etang, France
SIMONATO Dr L	IARC, Lyon, France
SMITH Prof Allan H	University of California, Berkeley, USA
SMITH J S	ICI Hillhouse, UK
SMITH Dr P M	Llandough Hospital, Penarth, UK
SPIRTAS Dr R	NCI/NIH, Bethesda, Maryland, USA
STAFFORD Dr J	Somerset, UK
STAHNECKER Dr E	BASF, Ludwigshafen, Germany
SULAIMAN Dr	Arabian Petrochemical Co, Saudi Arabia

TACHECI Dr H	Hoechst AG, Frankfurt, Germany
TAMBURRO Prof CH	University of Louisville, Kentucky, USA
ten BERGE Dr W F	DSM, Geleen, The Netherlands
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THERIAULT Dr Gilles	McGill University, Montreal, Canada
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TONER H P	Society of the Plastics Industry, Washington DC, USA
VAN DER MERWE Dr H J	AECI, Sasolburg, South Africa
WALLACE J R	Esso, Sarnia, Ontario, Canada
WALTEMAE H	BF Goodrich, Cleveland, Ohio, USA
WEJDLING S O	Norsk Hydro, Stenungsund, Sweden
WILLIAMS Dr DMJ	BP Chemicals International, Barry, UK
WILSON Prof R	Harvard University, Cambridge, Massachusetts, USA
YORK J	EVC, Brussels, Belgium
YOUNG A E	EVC, Brussels, Belgium
ZOBER Dr M A	BASF, Ludwigshafen, Germany

From: Dr B Bennett, Occupational Health Department, ICI Chemicals & Polymers,
Hillhouse Site, PO Box 4, Thornton-Cleveleys, Blackpool FY5 4QD, England

C O N F I D E N T I A L

REGISTER OF CASES OF ANGIOSARCOMA OF THE LIVER DUE TO EXPOSURE TO VINYL CHLORIDE - REVIEW DATE 1 JANUARY 1989

P R E F A C E : ACKNOWLEDGMENTS, SIGNIFICANT CHANGES, COMMENTS AND REQUESTS

- 1 The 7 new cases in the Register are the following: Canada 13; France 23, 24 and 25; Italy 07; UK 15 and 16.
- 2 There are amendments from the previous Register against the following cases: Canada 11 and 12, UK 14 and US 41.
- 3 I would like to thank the following for information about new cases: Dr Dietz, Dr Contassot, Dr Lagast, Dr Benetta, Dr Williams, Dr Smith, Dr Lee.
- 4 For additional information about other cases I thank also Dr Delorme, Monsieur Bibeau, Dr C A Johnson, Mr Roy N Johnson and Professor Lelbach.
- 5 So far as I know the following people are still alive: cases France 15, 22, 23 and 24; Germany 31 and 32; US 33 and 36. Is this correct? This is important information for the industry world-wide and I would appreciate news, especially regarding the cases in Germany, please.
- 6 Tables 4G and 4H have been enlarged by the addition of the factories at Tavaux (France) and Hillhouse (UK), as each of these has now had 4 cases.
- 7 I should be glad if all recipients of this Register would continue to keep me fully informed of any new cases, or give the name and address of someone who can send me the necessary details. I have again attached a blank sheet at the back of the Register so that information can be supplied under the appropriate headings, so far as possible. Please also send any other relevant information about earlier cases, or about factory changes.
- 8 RESEARCH: (a) May I again ask that all individuals involved in relevant research keep me informed and if possible send me reports. Perhaps recipients of this Register would pass on my request.

(b) Co-factors - I have recently met Professor Carlo Tamburro at the University of Louisville, USA, to assess the data which many of you kindly sent in response to my questionnaire about possible co-factors with Vinyl Chloride. We found there was no correlation within Europe but among the North American cases there was a suggestion of a co-factor effect on latency. In plants where Di-Ethyl Maleate had been used, the latency period seemed to have been shortened.
- 9 There was an excellent response to the circular I sent in June 1988 about the Register mailing list. Thank you. Please continue to keep me up to date with news of retirements, movements and changes of address.

FROM: Dr Brian Bennett, Occupational Health, ICI Chemicals & Polymers Limited
Hillhouse Site, P O Box 4, Thornton-Cleveleys, Blackpool, FY5 4QD, England

February 1989
BB/BGS

LIVER ANGIOSARCOMA CASES (REVIEW DATE - 1 JANUARY 1989)

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		Blank form for notifying new cases	-

ICI CHEMICALS & POLYMERS

WPX/ASL - LANCIOCASES,6

Page 1

BELGIUM

LIVER Angiosarcoma Cases - (Review Date : 1 January 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
BELGIUM															
01		12.01.13	Solvay	Jemeppe	00.07.58	00.05.76	63	18	17	29.06.76	Yes	High 1958-1968 exposed to 200 ppm for 8 hrs per day and certainly under 500 ppm in 6 to 9m ³ autoclaves 1968-1972 exposed to 50-200 ppm 8 hrs per day in 25m ³ autoclaves 1972-1974 exposed to 50-200 ppm in auto- clave room 1974-100 ppm 1975- 50 ppm RETIRED 1 Feb 1975	Autocleaner 14 yrs Polyworker 3 yrs Work in glass ind. & chemi- cal industry	Driller in a foundry (2 yrs) Farmer (15 yrs) Work in glass ind. & chemi- cal industry	Hepatic tests in Oct 1974 were normal. Retired Feb 1975 Hospitalised May 1976 Complete Clinical and career details are given in a paper by Hublet et al in Arch. Belg. Med. Soc., Hyg. Med. Trav. Med. Leg. 1977 pages 1601-622
02	SR	29 09 40	Solvay	Jemeppe	20 08 62	00.10.79	39	17	9	23 10 83	Yes	08.62-03. 63 01.67 -10.71 200 ppm 8h/day 04.63-12. 66 < 200 ppm	Autocleaner 15 yrs 5 mths Operator 3 yrs 9 mths.	Fireman since 10 71. Hepatic tests altered 10.79. Positive echography 11.79. Hepa- tectomy 02.80. Chemotherapy. Information given in letter 12 Nov 1984 from Dr Dr. Stuyver.	

GENC 008131

CANADA
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
CANADA			SHAWINIGAN												
01		15.12.13			1944	1955	41	11	11	02.09.55	Yes		Reactor cleaner	Operator (polymerisation)	Smoker
02		06.03.14			1943	1957	43	14	14	21.12.57	Yes		Maintenance, millwright, pipefitter	Operator	Worked overtime Smoker
03		26.08.19			1941	1962	42	21	20	23.03.62	Yes		Operator, foreman		Worked overtime Non-smoker
04		05.04.19			1945	1967	48	22	22	21.01.68	Yes		Reactor cleaner	Operator, foreman, water cooling unit	Worked overtime Smoker
05		07.05.11			1944	1968	57	24	05	05.07.68	Yes		Reactor cleaner	Water cooling unit	Worked overtime Smoker
06		15.12.19			1947	1971	51	24	23	10.04.71	Yes		Reactor cleaner	Maintenance, millwright	Worked overtime Smoker
07		09.11.19			1946	1972	53	26	25	24.12.72	Yes		Reactor cleaner	Machine shop operator and poly unit	Worked overtime Smoker
08		11.05.20			1961	1973	53	12	05	12.06.73	Yes		Reactor cleaner	Maintenance machine shop	In plant 25 yrs! Smoker
09		19.07.21			1946	1974	53	28	26	04.09.74	Yes		Furnace op. pipefitter maintenance		Worked overtime Smoker

* Paper by Dr F DELORME in Annales d'Anatomie pathologique Paris, 1978 Vol 23 No 2 pp105-114 claims this case had both a hepatoma and ASL simultaneously.

ICI CHEMICALS & POLYMERS

DAY - MONTH - YEAR
All dates use UK system

WPX/ASL - LANGUAGES, 8

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CANADA
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
CANADA															
10		16.05.15			1953	1976	61	23	14	00.04.77	Yes		Reactor cleaner	Furnace op. maintenance, packaging	Ex-smoker
11	LG	13.10.25	Gulf	Shawinigan	1943	Nov 85	60	42	5	05.04.86	Yes	High	1943-47 Operator & Supervisor VC Plant	Retired 1972 (Age 47)	Letters from Dr Fernand Delorme, Pathologist & M Bibeau, BFG
12	BC	14.09.20	Gulf	Shawinigan	1945	Mar 82	61	37	27	31.03.82	Yes	High Low Medium	1945-55 Autoclave Operator, PVC Resins 1955-65 VC Manufacture 1965-72 Autoclave Operator, PVC Resins	Retired 1972 (Age 52)	Letters from Dr Fernand Delorme, Pathologist & M Bibeau, BFG
13	SS	10.06.26	BFG	Niagara Welland	1957	1987	60	30	23	26.1.87	Yes	1957-70 High 1970-80 Low	Poly Cleaner & Operator Supervisor	Retired 1980 (Age 54)	Information from Dr H W Dietz, BFG, 1988

40 008133

CZECHOSLOVAKIA

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 89)

[illegible]

FRANCE
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 89)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
FRANCE															
01	M	15.04.24	RP	Rouss- illon	00.01.46	18.02.67	43	21	19	19.02.67	Yes	High	Autoclave worker and cleaner 19 yrs		Ref. Ravier et al Arch. Mal. Prof. 1 30 n° 13 Nov 75 p 171-177
02	SIM	03.06.11	PCUK	Brignoud	06.07.59	15.01.75	63	16	12	24.01.75	Yes (NIOSH no comment)	High	12 yrs on monomer 10 yrs on polymer- ization	Italian origin	Ref. G Bonneton et al "Nouvelle Presse Medicale" 15 Nov 1977 p 735
03	NAV	06.01.20	RP	St Fons	00.00.46	15.01.75	55	29	29	29.06.75	Yes	High	Polyworker 10 yrs as autoclave cleaner Compounding 13 yrs	VCM production 16 yrs Italian POW Shepherd, Sawyer, Mason	Ref. Rety et al Arch. Mal. Prof. 1 37 n° 16 June 77 p 551-555
04	MOR	27.01.27	PCUK	Brignoud	19.10.49	16.01.76	49	26	26	04.01.76	Yes	High	Monomer production worker 8 yrs PVC filtration 18 yrs		
05	B	29.01.38	PCUX	Brignoud	18.01.65	13.05.76	38	11	11	13.05.76	Yes	High	Polyworker 11 yrs	1) Thoracotomy 19th Feb 1976 1costal Angiosarcoma 2) Scintigraphy 1976 1found ASL 3) Haemorrhage 1bone 1from ASL 4) Right Hepatectomy	Ref. P. Coudere et al "Semaine des hopitaux" 10 Septembre 1976 1Previously had 1bone 1Angiosarcoma 1Also 1Pitt-Rowsky et al "La Nouvelle Presse Medicale" 17th July 1979 1Page 648's

ICI CHEMICALS & POLYMERS

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WPX/ASL - LANGIIOCASES, II

FRANCE
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
FRANCE															
06	Pa	14.04.34	PCUK	Brignoud	01.03.58	12.08.76	42	18	13	11.09.76 (NIOSH says 12.09.76)	Yes	Moderate	(1958-1960) 12 yrs filtration 10-11 yrs polyworker and works lab?		This man had AOL prior to AS. Ann. de Mal. Prof. (July '77 p 645 & 6. AOL was found in 1971 five yrs before ASL
07	GIR	26.04.27	RP	St Auban	01.07.50	After death (NIOSH says 00.07.76	49	26	22	02.07.76	Yes (NIOSH no comment)	High	Plant fore- man in polymer- isation	1972-6 admin section in St Auban	Died of hepaticemia Small liver lesion found after autopsy
08	B	01.04.34	Solvay	Tavaux	23.05.57	03.12.75	42	19	19	30.01.77	Yes	Moderate	16 yrs packer & autoclave clnr 14 yrs autoclave worker		Had been tunnel worker previously
09	RFX	08.10.14	RP	St Fons	10.01.48	26.04.76	63	28	28	25.12.77	Yes	Very High (1948-1966 Lesser Exposure 1966-1976	Polymer- isation operator, autocleaner, autoclave maintenance	10 yrs in sulphuric acid factory, storekeeper & general services	Operated 4.76 for removal of tumour from liver and died after second surgical operation for bilio bronchial fistula Paper by Dr Retz et al in Archives de Malades Professionals Vol 40 no 6 1979 pages 1241-3.

NC 008136

FRANCE
Sheet 3

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS	
France																
10	VP	24.05.19	RP	St Fons	00.12.56	10.01.78	58	21	21	10.01.78	Yes	High	Autoclave cleaner	10 yrs in mechanical engineering industry 1946-1956	Died of pulmonary embolism 5 days after surgery	
11	IL	15.02.12	RP	St Fons	00.01.41	12.08.78	66	37	31	13.11.78	Yes	High	1941-1946 polymer- isation general purpose worker 1946-1972 VCM synthesis (HCl & Acetylene) Foreman (agent de maitrise) 1972 retired			
12		16.08.14	PCUK	Brignoud	09.02.49	00.05.79	65	30	27	23.06.79	Yes	High	Monomer production and polymer- isation operator			
13		19.01.31	Solvay	Tavaux	23.09.63	26.06.79	40	16	13	22.08.79	Yes		Autocleaner 12 yrs, Auto- operator 19 yrs, Copolymers 14 yrs	12 yrs as cycle mechanic. 10 yrs as enameller in sanitary ware manufacture	Cigarette saucer until 1974. (11 all of 1977 due to oesophageal varices. Surgical intervention 25.05.79 (right hepatectomy)	
14	MJ	05-04-24	Chloe Chimie (Formerly RP)	St Fons	1943	00.07.81	57	38	36	29.07.81	Yes	Very High	1943-1975 1943-1975 and Intermitt- ently 1975-1979 Process	1943-1975 All types of maintenance and work manufacture & maintenance In VCM Poly Process	1975-1979 maintenance work	

FRANCE
Sheet 4

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
France															Left Hepatectomy 1983
15	DEP	03.01.37	Chloe Chimie (formerly RP)	St Fons	07.07.55	28.09.82	45	27	27	Alive	Yes	High-20 yr Moderate 17 yrs	Autoclave cleaner 1955-1962 autoclave operator 1962-1982		J C Contassot Letters of 15 10 1983 and 29 7 88.
16	GIM	13.07.22	Chloe Chimie (Formerly RP)	St Fons	17.10.41	05.01.83	61	41	38	03.04.83	Yes	High-33 yrs Moderate- Low - 5 yrs	Polymerisa- tion Process Man Maintenance Worker Health & Safety Agent		Retired Jan 1979. J C Contassot Letters of 15 10 1983 and 25 7 84.
17	HAR	22.02.23	Chloe Chimie (Formerly RP)	St Fons	17.06.48	03.04.83	60	34	28	03.04.83	Yes	High - 23 yrs	Autoclave Cleaner 1948-1971	Other sectors of St Fons Factory 1971- 1978	Retired 01.01.79 J C Contassot Letter of 15 10 1983
18	R	14.07.42	Solvay	Tavaux	09.09.63	21.03.84	42	21	21	27.12.84	21.03.84	High-12 yrs Low - 9 yrs	Autoclave Cleaner		09.03.84 Right Hepatectomy 05.05.84- 24.09.84 chemotherapy for lung- metastasis : partial remission. 08.84 - liver recurrence. 10.84 - lung evolution of the disease

FRANCE
Sheet 5

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
FRANCE															
19	MAZ	15.12.32	Atochem	Brignoud	07.04.59	26.10.84	52	25	25	06.11.85	Yes	High	Autoclave operator and cleaner		Myocardial infarction 1980. Coronary bypass 1981. Letter from Dr Contassot 15.4.86
20	BR	02.03.23	Atochem	Brignoud	1951	27.12.85	63	34	22	26.12.85	Yes	High	Autoclave operator and cleaner	In other parts of factory since 1946	Portal fibrosis from 26.04.74. The illness was diagnosed as presumably work related on 20.04.74. Letter from Dr Contassot 05.04.86
21	Pa	01.10.40	RP	(SEP Montlucon)	1959	03.06.86	45	27	4	28.06.86	Yes	High	Autocleaner 4 years	Maintenance worker	Hepatic test May 84 normal. Hepatic test May 86 showed abnormalities. Letter from Dr Barrat 18.07.86.
22	AL	13.08.28	Atochem	St Auban	01.09.58	05.11.87	59	29	26	Alive	Yes	High 1958-70 Low 1970-84	12 years Autoclave worker. 14 years in Control Room		Letters from Dr Contassot, Atochem 12.12.87 and 29.7.88.
23	MA	07.02.27	Atochem	St Fons	1944	1988	63	44	28	Alive	Yes	High	Autoclave Cleaner & all PVC production jobs		Liver transplant May 1988. Information from Dr J C Contassot Atochem, 1988
24	DO	08.12.26	Atochem	Brignoud	1943	1988	62	45	35	Alive	Yes	High	PVC Production 1- 2 years MCV Detection 1- 3 years PVC Production maintenance 1- 30 years		Partial hepatectomy, Apr 88, Chemotherapy Information from Dr Contassot, Atochem, 1988
25	BB	02.03.30	Solvay	Tavaux	1962	1988	58	26	23	07.05.88	Yes	11 years) High) 1- 5 years Polyflour 1- 6 years 12 years) Low) 1- 17 years	Polycleaner Polyflour Control Room		Primary liver Tumor Metastases lung, brain, bone, spleen, kidney. Information from Dr H Lagast, Solvay, November 1988

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LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

GERMANY
Sheet 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY															
01		00.00.30	4	4	01.10.56	19.09.68	38	12	12	25.01.69	Yes (NIOSH)		Polyworker		
02		00.00.31	4	4	14.10.57	25.09.70	39	13	11	14.12.71	Yes (NIOSH)		Polyworker		
03		00.00.30	12	12	09.06.52	00.03.73	43	21	16	10.10.73	Yes (NIOSH)		Filling pesticide aerosol cans with VC		Reported unde non polymer- isation workers in NIOSH list of 31.3.77. This of cours is strictly correct. However I wonder whether this man had high exposure to VCM in his can filling operation?
04		00.00.30	8	8	16.04.57	26.11.74	44	17	17	25.11.74	Yes (NIOSH)	200-500 ppm but high during 1 yr autocleaner	Polyworker 6 temporary autocleaner for 1 yr	1958 was autocleaner for 1 yr	Clinical details in paper by Gokel et al Virchows Arch A Path 1976 372 p 195-201

NC 008140

GERMANY
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY 05 (NIOSH gives as Case 06)		00.00.36	11	11	02.04.60	10.12.73	38	13	05	16.12.74	Yes (NIOSH)		BC Chemie says "chemistry laboratorian in the Techno- logical Research Department" (NIOSH says assistant factory chemist which may be wrong translation)		(Confirmed Reported under non-polymer- isation workers in NIOSH list of 131.3.77 and 11.78. I don't think this is a correct classification by NIOSH. The man may have been involved in VCM polymerisation in pilot plant or in main plant.
06 (NIOSH gives as Case 05)		00.00.32	7	7	16.12.62	00.00.75	43	13	12	09.01.75	Yes		PVC - Manu- facture Shift Leader		
07		00.00.26	8	8	15.04.54	12.11.75	49	21	21 (NIOSH says 12)	13.11.75	Yes		PVC Manu- facture and all work incl auto- cleaning 12 yrs (1954-66) (Foreman Tech) (Dev 8 yrs (1967-1975)		
08		00.00.17	4	4	19.07.54	06.04.75	58	20	20	25.12.75	Yes	?	Polyworker	?	

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY															
09		00.00.34	2	2	20.02.61	16.06.76	41	15	13	24.03.78	Yes	High peaks	12 yrs poly- worker incl 17% auto- clave cleaning Control room 1 yr		10/78 Confirmed Average exposure first 19 yrs 150 ppm 10cc 1000 ppm Next 3 yrs av 175 ppm. Last 1 yr av 35 ppm
10 (NIOSH gives as Case 11)		00.00.36	2	2	01.01.61	00.01.77	40	16	10	07.03.77	Yes	High peaks	10 yrs poly- worker incl 17% auto- clave cleaning		Average exposure first 19 yrs 150 ppm 10cc 1000 ppm Last yr av 175 ppm. CWH letter of 21.04.78
11 (NIOSH gives as Case 10)		00.00.29	8	8	10.10.55	28.06.77	47	21	22	28.06.77	Yes	High	13 yrs auto- clave cleaner 19 yrs filter operator		
12		00.00.38	4	4	00.00.61	00.10.77	39	16	6	07.10.77	Yes	?	PVC Manu- facture Autoclave worker for 16 yrs		

GERMANY
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LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY															
13		00.00.14	7	7	00.00.60	08.04.78	63	18	14	19.05.78	Yes				IF W Best letter of 130th June 1980 enclosing data from Mr R P Friedel of BG Chemie
14											Not an Angiosarcoma In his letter of 21.12.81, Mr Friedel said this was a "Plattenepi- thelkarzinom Der Speiserohre" (a carcinoma of the oesophagus) not attribut- able to VCM & not recognised as an indust- rial disease				IF W Best letter of 130th June 1980 enclosing data from Mr P Friedel of BG Chemie withdrawing this case
15		00.00.29	8	8	19.10.53	09.10.78	49	25	25	23.10.78	Yes	?	Autoclave cleaner and worker. Drier operator. Later shift leader		Angiosarcoma confirmed 109/79. Some detail of this & also cases 19, 13, 15, 16 & 17 given in INRW Report for 1978
(NIOSH gives this as Case 13)															
16		00.00.23	4	4	10.01.55	07.08.78	55	23	20	07.08.78	Yes	High	Autoclave worker till 1964. Leader and master		Angiosarcoma confirmed, full details of illness since March 1973 given in INRW Med Insp Rep for 1978. Different details given in "VC Associated Disease" by Leibach and Marsteller (1981) p71.
						(Leibach suspected ASL at Feb 1975 laparotomy)					ASL and Hepatocellular Carcinoma				

GERMANY
Sheet 5

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY															
17 (NIOSH gives as Case 15)		00.00.37	4	4	01.11.61	14.08.78	41	16	11	28.08.78	Yes	High	Autoclave worker	No	Angiosarcoma confirmed. Annual report of the North Rhine Westphalia Medical Inspectorate for 1978 pages 347-377 gives full details. Vinyl chloride disease diagnosed 02-02-73. Oesophageal varices. Radiologically confirmed acro osteolysis.
18		00.00.13	5	5	00.00.55	25.12.79	66	24	21	25.12.79	Yes		Autoclave Worker		
19		00.00.25	4	4	18.10.54	00.08.79	54	25	18	22.02.80	Yes Metastasing ASL	High	Autoclave Worker		Dr Besche letter of 13-04-82 to Dr W G F Adams
20		00.00.15	4	4	14.02.61	00.04.80	65	19	13	19.10.80	Yes Haemangio Endothelioma of liver with Metastases	High	Autoclave Worker		Dr Besche letter of 13-04-82 to Dr W G F Adams
21		00.00.13	4	4	01.01.62	00.09.79 (pronounced clinical liver symptoms)	66	18	13	19.06.80	Yes Haemangio Endothelioma of liver with Metastases	High	Autoclave Worker and worked in drying shop		Dr Besche letter of 13-04-82 to Dr W G F Adams
22		00.00.21	4	4	15.10.61	28.08.80	59	19	11	06.12.81	Yes Metastasing ASL	High	Autoclave Worker	Chargehand, subsequently Foreman	Dr Besche letter of 13-04-82 to Dr W G F Adams

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LIVER Angiosarcoma Cases (Rev Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTO- LOGICAL CONFIRM- ATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
GERMANY 23		00.00.27	8	8	1955	26.03.79	52	24	21	29.09.81	Yes	High (*300 ppm)	Chemistry Worker		Primary hepatocellular carcinoma; proliferation of the sinusoidal cells with sinusoidal ectasia. Friedel letter 23.12.86.
24		00.00.28	8	8	1969	11.10.82	54	13	12	28.05.83	Yes	High (*300 ppm)	Autoclave Cleaner		Prof Eder (Munich) letter 22.08.83. Friedel letter 19.04.85.
25		00.00.23	8	8	1960	28.09.81	58	21	13	14.01.83	Yes	High	Polyclave Worker and Autoclave Cleaner		Prof Selmaier (Munich) letter 22.08.83. Friedel letter 19.04.85
26		00.00.22	2	2	1953	14.06.76	54	22	22	22.11.82	Yes	High	Polyworker		Chronic hepatitis, angiomatosis, sinusoidal ectasia. Friedel letter 23.12.86.
27		00.00.28	4	4	1955	18.01.83	55	28	18	02.03.84	Yes	High	Autoclave Cleaner (11) 1972		Leibach. Friedel letter 19.04.85
28		21.11.23	7	7	01.10.60	11.08.85	61	25	25	25.08.85	Yes	High	Process Worker 1947- 84 (01.10.60) -31.03.84 PVC product- ion, agitator (area).		Annual VCM screening 24.04.85: no complaint, no abnormality detected. 1970 two-thirds gastrectomy for ulcers. 1971 Coronary thrombosis 1983 Femoral implantation 1984 Pulmonary embolism and pleuropneumonia. Landers letters 18.09.84 and 04.02.87.
29		00.00.22	2	2	1962	15.02.83	61	21	19	15.02.84	Yes	High	Chemistry Worker		Haemangiosarcoma. Friedel letter 23.12.86.
30		00.00.17	4	4	1951	07.01.80	62	29	25	25.05.83	Yes	High	Polyworker Shift leader		Haemangiosarcoma. Friedel letter 23.12.86.
31		00.00.23	8	8	1953	30.06.85	61	32	20	Alive?		?	Autoclave cleaner		Haemangiosarcoma. Friedel letter 23.12.86.
32		00.00.30	8	8	1955	00.04.85	55	30	21	Alive?		?	Polyworker Autoclave cleaner		Haemangiosarcoma. Friedel letter 23.12.86.

ITALY
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS	
ITALY																
01 (On NIOSH supple- mentary list)	LG	15.06.34	PANSAC	Mira Venice	00.00.65	19.04.71	36	06	03	16.04.71	?Yes		PVC Bag extruder		Primary tumour (may have been pericardium. Not homo- geneous with other cases. * **	
02	SE	13.11.29	Montedison	Porto Marghera	00.00.57	13.12.72	43	15	06	27.12.72	Yes		Polyworker		* **	
03	VC	14.03.20	Solvay	Ferrara	00.01.53	10.07.75	55	22	21	10.07.75	Yes	High	Autocleaner 18 yrs (1953- 61) Autoclave operator 12 yrs (1961- 72)	1972-5 did a variety of jobs including PVC packing.	**	
04	FB	20.07.37	ANIC	Ravenna	00.04.59	00.01.81	43	21	21	30.03.81	Yes	12 yrs - Very High 5 yrs - Medium 4 yrs - Low	11 yr - Monomer operator 20 yrs - Autoclave operator & other duties (in suspens- ion polymer- isation. Area Foreman in same Dept since 1975.	Never cleaned autoclaves. See paper by CHIAPPINO et al Med Lavoro Vol 6 (1982) pp 555-563	Non-smoker. Consumed little alcohol. No AOL.	**
05	IG Danesi	19.03.37	PANSAC	Mira Venice	00.00.67	07.03.83	46	16	8	06.04.83	Yes	Medium-? High	Bag extruder 1967-1975 Commercial Dept 1976- 1983		S Pagliarunga Telex of 12 Aug 1981	

* See Maltoni Med di Lavoro 65 p445, 1974. Further details in letter from Dr Montesano of IARC on April 1st 1982.

** Also see Maltoni and Rondinella in Acta Oncologica Vol 1 1980 pages 35 - 49.

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JAPAN

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
JAPAN															
01	Tomoji Mori	01.08.22	Mitsui Toatsu	Nagoya	00.04.53	24.10.75	53	22	13	24.10.75	Yes	PVC Assoc says not known. * Japan Times indicated on 25.10.75 exposures often at 3000 ppm up to 1974	13 yrs auto- clave cleaner 1964 - assigned to different work since had ill health		Japan Times 25.10.75 & Japanese PV Assoc letter of 31.03.78 30.11.87
02	SC	02.08.39	Kanegafuchi Chemical	Osaka	00.11.58	10.08.76	37	17	13	10.08.76	Yes	Not known	In polymer- isation work including autoclave cleaning		Japanese PV Association letters of 31.03.78 & 30.11.87
03	YS	01.09.30	Mitsui Toatsu	Nagoya	00.07.65	26.06.85	54	20	5	14.09.85	Yes	High	5 years Autoclave cleaner		Letter from Dr Nakamura Japanese PV Association 30.11.87

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008149

SWEDEN

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
<u>SWEDEN</u>															
01	NU	23.06.27	Kemanord	Sundsvall	14.08.51	20.10.70*	43	19	18	20.10.70	Yes		Polyworker		
02	BL	27.11.11	Kemanord	Sundsvall	00.01.45	00.08.72*	61	27	27	16.08.72	Yes	High	VCM production		Mr Sjoelin's letter of 128 March 1978 confirms BL was a monomer worker who was heavily exposed, probably even more so than a normal reactor cleaner
03	NE	10.06.10	Kemanord	Sundsvall	00.05.47	18.03.76	65	29	21	19.03.76	Yes	High	Polyworker		
04	AL	16.11.14	Kemanord	Sundsvall	00.00.46	12.05.77	62	31	31	12.05.77	Yes	High	1946-1958 polymer- isation worker (12 yrs) & 1958- 1977 foreman (19 yrs)		In first 12 yrs of employment had been heavily exposed. In 1974, liver abnormality and necrosis diagnosed. Data confirmed in Dr D Byren letter 18.8.77 to CEFIC
05		12.03.19	Kemanord	Sundsvall	11.05.64	22.11.80	61	16	16	22.11.80	Yes	High - 6 Years Low - 10 Years	1964-1970 centrifuge operator 1970-1980 drier operator		Letter of 2nd Nov 1981 from Dr David Byren

In his letter of 1st April 1982, Dr Montesano of IARC says in Sweden's National Board of OS Health gives 20-02-70 as date of diagnosis for Case 01 and 12-05-72 for Case 02.

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UK

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
UK 01	WJ	20.04.01	ICI	Hillhouse	04.04.44	03.12.72 (Fox & Collier paper says 23.12.72)	71	28	22	03.12.72 (Fox & Collier paper says 23.12.72)	Yes	500 ppm	1944-7 VCM 1947-8 Drier 1948-61 Autoclave operator 1961-66 Drier		Lee and Harry Lancet 29-06-74 pages 1316-8
02															Dubious fabrication case
03	BJW	02.06.37	BP	Berry	00.02.66	00.12.74	37	09	3.5	24.12.74	Yes	High	Autoclave cleaner		Exposure limited to 12.66 - 9.69
04	JSR	23.06.20	ICI	Hillhouse	26.04.54	00.06.79	59	25	18	12.10.79	Yes	Medium- high	54-5 Bagging Plant 55-6 Drier Plant 56-58 Autoclave worker 58-61 Chargehand Drier Plant 61-72 Foreman IC 2/3 Plant	Pre-war fish packer 1939-45 army vehicle maintenance 1945-54 fish packer	

NC 008151

UK

Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
UK 05	JK	30.03.14	BP	Barry	08.01.51	00.10.79	65	28	21	19.11.79			1951-52 Polycleaner 1952-55 Latex 1955-60 Polyfloor 1960-64 Poly Chargehand 1964-70 Charging operator 1970-72 Drier operator		
06	CEP	1931	BP	Barry	1962	09.01.80	48/9	18	12	09.01.80			17 yrs Poly Floor Operator 15 yrs Greaser on Poly Floor		
07	RGB	26.04.20	BP	Barry	1963	00.00.80	60	17	8.2	13.06.80			Polycleaner 1963-5 Recovery 1965-1971		
08	WTH	08.05.24	BP	Barry	19.09.50	27.11.81	57	31	24	25.12.81		1950-1958 500 ppm 1968-1974 200 ppm	1950-51 Autoclave operator 1951-1957 Chargeman autoclave building 1957-1974 Shift supervisor autoclave building - Never cleaned autoclaves but supervisor's job entailed entering autoclaves to inspect them	1938-1948 Motor Mechanic 1948-1950 Operator on Acetylene Production Plant	

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UK

Sheet 3

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
UK 09	EIGP	07.05.25	BP	Barry	15.02.50	02.03.83	58	33	29	24.02.83	Yes	Medium	Polyworker	2 years on Acrylonitrile Resin Plant. Also prior to 1950. 4 years RAF maintenance. 3 years motor car paintshop. 2 years in Graving Dock.	
10	GJT	04.04.47	BP	Barry	27.04.66	01.05.84	37	18	4.2	16.05.84	Yes	High - 11 months (500 ppm). Low - 18 months (50 ppm). Medium - 21 months (200 ppm)	Polycleaner 1966-67. Spray-drier bagger 1967- 68. Blow-down stripper operator 1968-70.	Heavy goods vehicle driver until final illness.	Information given in letter 18.06.84 from Dr D M J Williams
11	GLP	08.05.28	BP	Barry	19.12.65	02.06.85	57	19	16	02.06.85	Yes	High 1965-69 Med 69-79 Low 79-82	Polycleaner 1965-68. Service operator 1968-69. Poly operator 1969-79. Leading Hand 1979-82.		Letter of 04.06.85 Dr Paul Smith and letter of 04.06.85 Dr D M D Evans Oesophageal haemorrhage due to oesophageal varices due to Angiosarcoma of liver
12	JT	24.01.37	ICI	Hillhouse	16.09.57	03.06.85	48	28	28	06.12.85	Yes	Low 1957-59 High 59-74 Low 74-85	Spare man, bagging floor 1957-59. Autoclave operator 1959-85		Letter 26.06.85 Dr F I Lee

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UK
Sheet 4

LIVER Angiosarcoma Cases - (Review Date : 1 January 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTO- LOGICAL CONFIRM- ATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
UK 13	MJ	02.03.48	BP	Barry	1968	Jan 86	37	18	3	02.06.86	Yes	High Low High	Polycleaner 1968-69 Central Depot 1969-70 Polyfloor 1970-1971	Moved to Acrylonitrile Plant until left BP 1983. Manager of IC & SS Ltd at Cardiff Airport 1983-86	Remained well, working actively, until Jan 1986
14	GS	15.06.42	BP	Barry	07.07.66	27.08.87	45	21	11	01.12.88	Yes	10 months High 10 years constant Medium but on inter- mittent jobs	Polycleaner 1966-67 Polyfloor worker at times between 1968-1982		Letters from Dr DMJ Evans, Pathologist, Penarth, Wales and Dr DMJ Williams, BP, Barr
15	BCP	23.08.21	BP	Barry	1956	1988	66	32	16	01.05.88	Yes	19 years High 5 years Medium 12 years Low	Poly cleaner & Operator Blow & Recovery Operator Utility Operator	Exposure periods intermittent	Information from Dr D M J Williams, BP, and Dr Paul Smith, Pathologist 19
16	RT	25.05.22	ICI	Hillhouse	1963	1988	66	25	12	12.11.88	Yes	1 year) Low) 19 years) High) 2 years) Low)	Packer Operator Autoclave Operator		Hepatic fibrosis 1974 Oesophageal varices Porta-caval shunt 1975 Information from Dr B Bennett ICI, and Dr F I Lee, Blackpool Victoria Hospital 1988.

GENC 008154

USA
Sheet 1

LIVER Angiosarcoma Case - (Review Date: 1 Jan 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA															
01	Earl Parks	17.10.23	BFG	Louis- ville	09.12.48	03.03.73	49	24	21	03.03.73	Yes		Pot Cleaner (Block Jama 1974) p 53	History given in Annals NY ACAD SCIENCES Vol 329 (1979) page 190 in 1974 Paper by B R Cottline of OSHA	Rolling Stone Art Ref 1 NY Acad of Sc Symp Also Block Jama 1.7.74 p 53
02		19.08.33	BFG	Louis- ville	15.11.55	00.05.70	37	14	13	27.09.71 (NIOSH says 28.09.71)	Yes		Pot Cleaner (Cf Block)		Ref 1 Also Block JAMA 1.7.74 p 53
03	Edward Binwiddie	25.05.15	BFG	Louis- ville	28.11.45	19.12.73	58	28	28	19.12.73	Yes		Pot Cleaner (Cf Block)	Louisville Courier Journal 02-09-80	Ref 1 Also Block
04		15.01.24	BFG	Louis- ville	06.07.52	19.08.67	43	15	15	07.01.68	Yes		Pot Cleaner (Cf Block)		Ref 1 Also Block
05		25.01.12	BFG	Louis- ville	19.06.44	09.04.64	52	20	20	09.04.64	Yes		Pot Cleaner (Cf Block)		Ref 1 Also Block
06	Ray Austin Jones?	23.11.28	BFG	Louis- ville	17.01.62	00.02.74	45	12	12	24.07.75	Yes		US Air Force Pot Cleaner (Cf Block)		Ref 1 + Louisville Times 23.7.75 Retired April 1974 Also Block
07	Charles T Smart	03.05.22	UCC	S Charle- ston	27.08.44	00.00.68	45	24	17	23.03.68	Yes				Ref 1
08		06.05.20	Goodyear	Niagara	07.10.46	00.08.61	41	15	15	29.08.61	Yes				Ref 1

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USA
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA															
09	Raymond Gettle- Finger?	08.11.31	BFG	Louis- ville	28.05.45	01.03.74	43	29	24	11.03.75	Yes	2000 ppm			Ref 1 has wrong figures for first exposure. Louisville Times 29.10.74, 12.3.75, 10.3.76
10		16.08.13	Goodyear	Niagara	12.06.51	00.05.68	55	17	17	10.05.68	Yes				Ref 1
11		27.05.09	Goodyear	Niagara	14.10.46	00.03.70	61	23	23	16.03.70	Yes				Ref 1
12	Francis A Bachman	17.11.18	Firestone	Pottstown Pa	13.07.49	02.05.69	50	20	19	02.05.69	Yes	High 10 yrs	10 yrs as reactor op. (not cleaner - separate crew cleaned autoclaves)	Utility & Service op. Bagger Dryer op. Stripping op. 3 yrs prior service in tyre plant	Ref 1 + letter of 26 April 1978 from Russell A Par to J T Seawell of MCA
13	Richard Edward Clendenin	01.12.21	UCC	S Charle- ston	11.12.42	00.05.74	52	32	26	07.04.74	Yes	2000 ppm			Charleston Daily Mail 21.7.75
14															Never diag- nosed as ang- iosarcoma of liver. Inform- ation given in letter 22 May 1984 from J A Salg.
15															Accountant; IASL - No evi- dence of VCM exposure.

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USA
Sheet 3

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

UK System of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA															
16	James Howard	04.11.27	BFG	Louis- ville	08.05.50	00.00.69	41	19	04	27.03.69	Yes		1951-4 VCM (polymer- isation	From 1954 (onwards in (Army and other (service. (46-50 Army	Table 4 in (Wagoner (Testimony to (US Senate (Confirmed in (M N Johnson (ltr 07.08.78
17	Peerenboom	06.05.31	BFG	Louis- ville	23.06.55	11.10.74	43	19	19	16.10.80	Yes on 11.10.74 but no post-mortem 16.10.80				Dr M N Johns letter of 24.2.81 con- firmed death 16 years after diagnosis
18	Charlie Arthur	22.04.28	BFG	Avon Lake	15.09.54	00.00.75	46	21	13	02.11.75	Yes	13 yrs (autocleaner (8 yrs on (Estol (plasticiser (Carboset (operation	Navy Tyre Store	Confirmed in (M N Johnson (ltr 07.08.78 (Also Rolling (Stone mag. (15.01.76	
19	Virgil Christian	00.00.15	UCC	S Charle- ston	00.00.43	19.06.75	60	32	32	06.04.76	Yes	2000 ppm			Williamsport (Sun Gazette (21 June 1971 (Charleston (Daily Mail (21.7.75
20		31.08.17	Goodyear	Niagara	00.00.55	30.01.76	58	21	18	30.01.76	Yes				NIOSH letter (of 25.10.79
21	Chester Hinkle	02.09.09	UCC	S Charle- ston	00.12.46	Early 77	67	30	22	02.01.77	Yes				28 yrs with (UCC at SC (Retired (News release (23.2.77

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USA
Sheet 4

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA															
22		02.10.23	BFG	Louis- ville	11.07.47	00.01.76	52	29	28	04.12.76	Yes				{Louisville {Times 26.1.76 {said he was {the 10th AS {victim at {Bells Lane of {whom 8 had {died by {26.1.76 {In his letter {of 16.09.81 {Dr M N Johnson {confirms this {is the {case described {by Dannaher {Tamburro & Ya {in Feb 1980 {Am J Medicine {Vol 70 p280
23		00.00.23	Great American Chemical Company	Fitchburg Mass.	08.09.58	06.04.73	50	15	14	06.04.73	Yes				
24	Charles Edward Moore	17.05.17	UCC	S Charle- ston	1939	27.05.77	60	38	24 (NIOSH {says 26)	27.05.77	Cholangio- sarcoma {(R Kaminski {26/2/79)	Medium to high for 24 yrs vinyl resin unit and dispersion vinyl resins (unit first as fitter helper, then shift utility man	{1941-65 non- {solvent {vinyl resin {unit and {dispersion {vinyl resins {exposed as {reactor {cleaner {1943 became {shift fitter {1946 became {shift utility man	{1937-39 was {off and on {labourer {1939-41 may {have been {exposed as {reactor {cleaner {1943 became {shift fitter {(5 Nov 1980) {suggests that {NIOSH will {retain on {register sin {employment was {terminated {this neoplas {may be assoc {ated with AS'	{N M Wheeler {letter of {18.8.77 to {J Stafford {gives details {Rose Kaminski {letter of {26/2/79 {R Kaminski {(5 Nov 1980) {suggests that {NIOSH will {retain on {register sin {employment was {terminated {this neoplas {may be assoc {ated with AS'
(25)															{R N Wheeler {letter of {20/2/79 and {Rose Kaminsk {letters of {26/2/79 and {15/11/80
															Removal from register confirmed in R Kaminski letter of 5 November 1980

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USA
Sheet 5

LIVER Angliomacoma Cancer - (Review Date: 1 Jan 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA															
26	John Berry	07.07.23	BFG	Louis- ville	03.10.47	00.00.77 (up to 2 years after death)	52 (death)	28 (death)	18	11.02.75	Yes	Exposed in (some degree (to 22 (chemicals (but main (exposure (was to VCM, (probably (high	Various jobs (in PVC (plants from (cold room to (paste (recovery to (PVC charging (operator to (paste (charging. (11 August (1965. (Terminated (employment (Jan 1966		IR Kaminski (letter of (26/2/79 and (Prof. Tambu (letter of (19/1/79
27	J L Forrest	11.05.16	UCC	S Charle- ston	01.07.41	30.11.78	62	37	20 (NIOSH (says 27 (and C (Daily Mail (25)	25.11.78	Yes	High	Operator to (10.10.76 (dispersion PVC (manufacture	Exposure in (bulk and (1979 and (Charleston (Daily Mail (30.11.78 and (IR Kaminski (26/2/79	IR N Wheeler (ltr of 4 Jan (1979 and (Charleston (Daily Mail (30.11.78 and (IR Kaminski (26/2/79
28		11.04.17	UCC	S Charle- ston	00.08.44	03.11.78	61	34	33	03.11.78	Yes				IR Kaminski (letter of (6/4/79
29		12.10.07	UCC	S Charle- ston	00.05.42	00.03.80	72	38	16	01.03.80	Yes				IR Kaminski (Letters of (19th June 19 (16 5th Nov 19
30	WVN	22.07.22	Tenneco Chemicals	Flemington	11.06.64	30.12.80	58	17	15	30.12.80	Yes	6 - Unknown 9 - Minimal	Maintenance Mechanic 6 yrs Elsewhere 11 yrs Boiler house Operator 19 yrs		
31		08.11.23	UCC	S Charle- ston	12.05.46	01.08.81	57	35	13	02.04.82	Yes	High (But (not as high (as reactor (cleaner (would (experience) (Worked as (labourer (from (June 1941 (to May 1946) (and may (have (cleaned (reactors in (other sites	Chemical (Operator in (charge (reactor (operator and (from July 1976 (to date (Foreman (Aliphatic (Chemical (Operation	From 1959 to (1976 Aliphatic (Chemicals (operator and (letter of (19.11.81. (Also Dr Dacey (letter of (07.03.83 re (date of death	

USA
Sheet 6

LIVER Angiosarcoma Cases (Review Date: 1 Jan 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTOLOGICAL CONFIRMATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
32	C W Giroux	22-02-08	Monsanto	Springfield Mass	15-10-51	00-07-79	71	28	14 (in PVC autoclave area)	17-05-80	An autopsy was done and immediate cause of death given as "Angiosarcoma"	The death certificate gave "Mr Giroux" usual occupation as "kettle operator" in and "chemicals industry".	1940-1951 Various jobs in polymer manufacture BUTVAR LUSTREX 1951-1964 Various jobs around PVC autoclaves 1964-1973 Various clerical jobs in PVC polymerisation facility/ Retired 01-03-73.		Information given in letter of 24 February 198 from Dr Walter C Barnes of Monsanto Springfield Dr A Munn of Monsanto Europe.
33	S Ferguson Jnr	08-10-27	BFG	Louisville	09-09-54	11-05-82	54	28	28	Alive	Yes		Multiple jobs including Poly Operator + Polycleaner.		Prof Tamburr letter of 12 Aug 1982 Dr M N Johns letter of 28 Feb 1983.
34	Mr Byrum	29-01-34	BFG	Louisville	1955	03-11-82	48	27	10	04.08.83	Yes		Poly Operator + Autoclave Cleaner 1955-65.	1965 left BFG to become a Clergyman.	Dr M N Johns letter of 13 Nov 1982, 28 Feb 1983 and 9 Aug 1984.
35		09-03-12	UCC	S Charles- ton	23-07-44	18-07-83	71	39	14	18-07-83	Yes	High from 1944 to 1955. Medium from 1955-1958			Dr Dacey letter of 15 Sept 1983.
36		27-08-32	The General Tire and Rubber Co	Ashtabula	11-06-56	21-08-83	50	27	27	Alive	Yes	Moderate	1956-56 labourer 1956-57 prod helper 1957-70 operator 1970-75 electrician 1975-present operator		Dr W Landrie letter of 12 Sept 1983 spotted at medical (May 1983). Testing commenced May 1983

USA
Sheet 7

LIVER Angiosarcoma Cases - (Review Date: 1 January 1989)

UK system of dates
DAY - MONTH - YEAR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE (TO DIAGNOSIS)	YEARS OF EXPOSURE	DATE OF DEATH	HISTO- LOGICAL CONFIRM- ATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA 37	Mr J Payton	29.08.29	BFG	Louis- ville	1953	06.08.84	54	31	22	06.08.84	Yes	High	Worked regularly in PVC area in the early days was a reactor cleaner 1953-75.		Information given in letter 09.08.84 from Dr M N Johnson
38	JWB	28.08.22	Air Products	Calvert City	00.02.63	19.01.84	61	20	20	28.10.83	Yes	High	Normal 1963-1982 progression from helper to senior operator, cleaned reactors, stripping and recovery areas as well as charging operator.		Thrombo cytopenia and leukopenia since since 1978. Gold treatment for arthritis 1976. Under Dr's care about 6 months before death, had passed standard physical examination 3 months earlier. J Barr letters of 22.10.84 and 23.01.85.
39	J Memice	27.06.18	Pantasote	Passaic	1960	March 1984	65	24	23	29.06.84	Yes	Low	29.09.60 - May 66 Vinyl Fabrication Plant May 66 - Aug 70 Utility Resin Operator (Inc Jul 66) Sep 67 Reactor Operator (Sep 70-82 Monomer Operator 1982-83 Mill Operator, Calendar Shop, until retirement	Worked before 1960 with US Air Force, United Wool Dyers and Okantite	Never in hospital for any chronic or acute medical problems. Death certificate states cause of death cardio-pulmonary arrest secondary to angiosarcoma of liver. Letter of 15.07.86 from John E Ertel of Pantasote with letter of 24.02.86 from Dr Auerbach, Pathologist.

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTO- LOGICAL CONFIRM- ATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
USA 40	P P Gilmer	26.10.14	BFG	Louis- ville	22.05.42	1987	72	45	34	03.01.87	Yes	High {1942-1974} Low {1975-1976}	Chemical Worker {1942-45} Foreman {1945-76}		Letter from Dr Dietz, BFG, {10.3.87}
41	R Buckley	2.02.15	Goodyear	Niagara Falls	1949	1987	72	38	27	20.08.87	Yes	High { {Shift Sup/ {Foreman, {PVC Resin {Production {Medium {1965-77 {INF Plant {Left PVC area for 6 months {in 1965}	1949-65 {Chemical Op/ {Shift Sup/ {Foreman, {PVC Resin {Production {Medium {1965-77 {INF Plant {Left PVC area for 6 months {in 1965}	Retired 1977 {Age 62}	Letters from Prof Tamburro University of Louisville, 1987 and Dr C A Johnson, Goodyear, 1988

YUGOSLAVIA

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1989)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COUNTRY AND REFERENCE NO	NAME OR INITIALS	DATE OF BIRTH	COMPANY	FACTORY	FIRST VC EXPOSURE	DATE OF DIAGNOSIS	AGE AT DIAGNOSIS	YEARS OF EXPOSURE TO DIAGNOSIS	YEARS OF EXPOSURE	DATE OF DEATH	HISTO- LOGICAL CONFIRM- ATION	ESTIMATED EXPOSURE LEVEL	OCCUPATION	OTHER CAREER HIGHLIGHTS	OTHER COMMENTS
YUGOSLAVIA															
01		05.04.14	Jugo Vinil	Split	00.00.53	08.04.73	59	20	20	08.04.73	Yes				SARIC et al paper Env Health Perspective Vol 17. pp 189-192 1976
02		15.11.31	Jugo Vinil	Split	00.00.50	12.07.73	42	23	18	12.07.73	Yes*		VCM Production		*In his letter of 3 Oct 1978, Dr Spirtas of NIOSH changed the status of Case 02 to VCM production employee. Dr Spirtas also notified a new Case 03 also a VCM production worker.
03		21.12.31	Jugo Vinil	Split	04.06.54	11.01.76	45	22	22	11.01.76	Yes*		VCM Production		
04		11.06.30	Jugo Vinil	Split	15.12.58	03.09.78	48	20	18	03.09.78	Yes				Rose Kaminski letter of 19 June 1980 and IARC letter of 1 April 1982

GENC 008163

Incidence of ASL Cases Per AnnumBy date of death

1955	.....	1
6	.....	0
7	.....	1
8	.....	0
9	.....	0
1960	.....	0
1	.....	1
2	.....	1
3	.....	0
4	.....	2
5	.....	0
6	.....	0
7	.....	1
8	.....	5
9	.....	3
1970	.....	2
1	.....	3
2	.....	5
3	.....	8
4	.....	5
5	.....	11
6	.....	11
7	.....	9
8	.....	10
9	.....	5
1980	.....	10
1	.....	5
2	.....	3
3	.....	10
4	.....	7
5	.....	6
6	.....	5
7	.....	3
8	.....	4
Total		<u>137</u>

N.B. 1 Does not include Italian 01 but does include German 03.

2 The 1977 total includes US case 24 which is a Cholangiosarcoma.

3 Does not include the following who are still alive, so far as known: Fr15, 22, 23 & 24, G31 & 32, US33 & 36.

Distribution of ASL Cases by Country

USA	38 ***
W Germany	31 ** ***
France	25 ***
UK	15
Canada	13
Sweden	5 ****
Italy	6 *
Yugoslavia	4 *****
Japan	3
Czechoslovakia	2
Belgium	2
Norway	1
Total	145

* Omit It01 - atypical case of PVC bag extruder.

** Includes G03 aerosol can filler.

*** Includes case US 24 which was diagnosed as Cholangiosarcoma; & Fr15, 22, 23 & 24, G31 & 32, US33 & 36, who are still alive, so far as known.

**** Includes one monomer worker.

***** Includes two monomer workers.

i.e Western Europe	85
North America	51
Rest of World	9

Total 145

TABLE 3Pattern of ASL Cases by Factory(a) W Europe

Of the 85 cases in W Europe, 73 have occurred in clusters at 12 factories. Of the 31 German cases, 28 have occurred in clusters at 4 factories.

	<u>ASL Cases</u>
Dynamit, Troisdorf, Germany	12
BP, Barry, UK	11
Wacker, Burghausen, Germany	9
Atochem (formerly Chloé Chimie, formerly RP), St Fons, France	9
Atochem (formerly PCUK) Brignoud, France	8
Kemanord, Sundsvall, Sweden	5
CWH, Marl, Germany	4
ICI, Hillhouse, UK	4
Solvay, Tavaux, France	4
Lonza, Waldshut, Germany	3
Solvay, Jemeppe, Belgium	2
Atochem, St Auban, France	2
	<u>73</u>

NB: There are 32 pre 1962 PVC plants in W Europe; 19 of these have had ASL cases (Ref Table 8)

(b) N America

Of the 51 cases in N America, 42 have occurred at four factories out of a total of 55 factories. In N America 42 plants have not had ASL cases.

	<u>ASL Cases</u>
BFG, Louisville, US	15
BFG, Shawinigan, Canada	12
UCC, S Charleston, US	10
Goodyear, Niagara Falls, US	5
	<u>42</u>

NB: There are 29 pre 1962 PVC plants in N America; 13 of these have had ASL cases (Ref Tables 9 & 10)

(c) Rest of World

The 9 ASL cases are believed to be in one cluster of 4 and two clusters of 2 cases.

TABLE 4A

Latency Periods (Years from first Exposure to Diagnosis)

	<u>Country</u>	<u>No of Cases</u>	<u>Total Years</u>	<u>Average</u>	
<u>W Europe</u>	Belgium	2	35	17.5	
	France	25	689	27.56 *	
	Germany	31	632	20.38 *	
	Italy	6	127	21.16	
	Norway	1	22	22	
	Sweden	5	122	24.5	
	UK	<u>15</u>	<u>350</u>	23.33 *	
		<u>85</u>	<u>1977</u>	<u>23.25</u>	W Europe Average
<u>N America</u>	US	38	993	26.13 *	
	Canada	<u>13</u>	<u>314</u>	24.15 *	
		<u>51</u>	<u>1307</u>	<u>25.62</u>	N America Average
<u>Rest of World</u>	Czechoslovakia	2	30	15.0	
	Japan	3	59	19.66	
	Yugoslavia	<u>4</u>	<u>85</u>	21.2	
		<u>9</u>	<u>174</u>	<u>19.33</u>	Rest of World Average
<u>Summary</u>	W Europe	85	1977	23.25	
	N America	51	1307	25.62	
	Rest of World	<u>9</u>	<u>174</u>	19.33	
		<u>145</u>	<u>3458</u>	<u>23.84</u> *	World Average

* Of the countries with > 10 cases, France, USA & Canada have an average latency period above world average; Germany & UK below world average.

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DISTRIBUTION OF LATENCY PERIODS TABLE 4B

	0-9 yrs	10-14 yrs	15-19 yrs	20-24 yrs	25-29 yrs	30-34 yrs	35+ yrs	Total	Average Latency Period (Table 4A)
Belgium			2					2	17.5
Canada		3		5	2	1	2	13	24.15
Czechoslovakia		1	1					2	15.0
France		1	4	3	9	3	5	25	27.56
Germany		5	9	10*	5	2		31	20.38
Italy			2	2	2			6	21.16
Japan			1	2				3	19.66
Norway				1				1	22
Sweden			2		2	1		5	24.5
UK	1		5	1	5	3		15	23.33
USA		2	7	9	8	5	7	38	26.13
Yugoslavia				4				4	21.2
TOTAL	1	12	33	37	33	15	14	145	23.84

* Includes G 03 aerosol can filler

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TABLE 4C
LATENCY PERIOD OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE

MAX POSSIBLE LATENCY PERIOD	YEAR OF FIRST EXPOSURE	LATENCY PERIOD (NO OF YEARS)	ARITHMETIC MEAN OF LATENCY PERIODS	
49	1939	38*		
48	1940		$\frac{289}{8} = 36.12$	
47	1	37, 21, 37, 41		
46	2	32, 38, 45		
45	3	38, 14, 32, 42, 45***		
	4	28, 11, 24, 20, 24, 34, 39, 44***	$\frac{886}{31} = 28.58$	
	5	27, 22, 28, 29, 37		
	6	21, 29, 31, 26, 28, 15, 23, 30, 35		
41	7	29, 24, 29, 28		
40	8	28, 24, 34		
	9	30, 26, 20, 38	$\frac{559}{22} = 25.41$	
	1950	26, 22, 31, 19, 23, 14, 33		
	1	19, 28, 17, 28, 34, 29		
36	2	21**, 15		
35	3	25, 22, 23, 22, 20, 31, 22, 32***		
	4	21, 21, 25, 25, 21, 28***, 22	$\frac{849}{37} = 22.94$	
	5	22, 23, 24, 14, 19, 21, 27, 27***, 24, 28, 30***		
	6	21, 12, 27***, 32		
31	7	19, 17, 15, 13, 16, 28, 30		
30	8	18, 18, 15, 17, 20, 29***, 28		
	9	16, 21, 25, 27	$\frac{598}{31} = 19.29$	
	1960	13, 18, 21, 25, 24, 25		
	1	15, 16, 16, 16, 19, 19, 12		
26	2	13, 18, 17, 12, 18, 21, 26		
25	3	16, 17, 20, 21, 25		
	4	16, 17	$\frac{246}{14} = 17.57$	
	5	11, 19, 20		
	6	9, 18, 21		
21	7	16		
20	8	18		
	9	13	$\frac{31}{2} = 15.5$	
	1970			
	1			
16	2			
15	3			
	4			
	TOTAL	145 CASES	$\frac{3458}{145} = 23.84$	

* Cholangiosarcoma

** Aerosol can filler

*** The following are still alive, so far as known Fr15, 22, 23 & 24, G31 and 32, US33 and 36

TABLE 4D

LATENCY PERIODS OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE AND GEOGRAPHICAL LOCATION

MAX POSSIBLE LATENCY PERIOD	YEAR OF FIRST EXPOSURE	LATENCY PERIODS IN		ROW
		WESTERN EUROPE	NORTH AMERICA	
49	1939		38*	
48	1940			
47	1	37,41	21,37	
46	2		32,38,45	
45	3	38,45***	14,32,42	
	4	28,44***	11,24,20,24,34,39	
	5	27	22,28,29,37	
	6	21,29,31,33	26,28,15,23,30,35	
41	7	29	24,29,28	
40	8	28,34	24	
	9	30,26	20,38	
	1950	26,22,31	19	23,14
	1	19,28,34,29,	17,28	
36	2	21**	15	
35	3	25,22,22,32***	23,31	22,20
	4	21,21,25,25	21,28***	22
	5	22,23,24,27***24,28	14,19,21,27	
		30***		
	6	21,12,32	27***	
31	7	19,17,15,13,28	30	16
30	8	18,18,29***28	15	17,20
	9	16,21,25,27,		
	1960	13,18,21,25,25	24	
	1	15,16,16,16,19,19	12	
26	2	13,18,17,18,21,26	12	
25	3	16,17,21,25	20	
	4	16	17	
	5	11,19		20
	6	9,18,21		
21	7	16		
20	8	18		
	9	13		
	VIOLA 1970			
	1			
	2			
	MALTONI 3			
	TOTAL CASES	85	51	9

* Cholangiosarcoma

** Aerosol can filler

*** The following are still alive, so far as known Fr15 22, 23 & 24, G31 and 32, US33 and 36

(Review date 1 January 1989)

TABLE 4E

PLANT	START UP DATE	LATENCY PERIODS OF ASL CASES IN SPECIFIC PLANTS (10 OR MORE CASES)	NO OF CASES	AVERAGE LATENCY PERIOD
LOUISVILLE USA	1940?	12,14,15,19,19,20,24,27,28,28,28,29,29 31,45	15	24.53 years
TROISDORF W GERMANY	1954	12,13,16,16,18,19,19,21,23,25,28,29	12	19.91
SHAWINIGAN CANADA	1943 (1941?)	11,12,14,21,22,23,24,24,26,28,42,37	12	23.66
BARRY UK	1948	9,17,18,28,31,33,18,19,18,21,32	11	22.18
S CHARLESTON USA	1939?	24,30,32,32,34,35,37,38,38,39,	10	33.99

(Review date 1 January 1989)

TABLE 4F

LATENCY PERIOD OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE
AND SPECIFIC PLANT (10 OR MORE CASES)

YEAR OF FIRST EXPOSURE	LOUISVILLE USA	TROISDORF W GERMANY	SHAWINIGAN CANADA	BARRY UK	S CHARLESTON USA
1939					38
1940					
1			21		37
2					32,38
3			14,42		32
4	20		11,24		24,34,39
5	28,29,27		22,37		
6			26,28		30,35
7	29,28		24		
8	24				
9					
1950	19			31,33	
1		29		28	
2	15				
3	31		23		
4	28	21,25			
5	14,19	23,28			
6		12		32	
7		13			
8					
9					
1960					
1		16,16,19,19,	12		
2	12	18		18	
3				17	
4					
5				19	
6				9,18,21	
7					
8				18	
9					
1970					
1					
2					

(Review date 1 January 1989)

TABLE 4G

PLANT	START-UP DATE	LATENCY PERIOD OF ASL CASES IN SPECIFIC PLANTS(4-9 CASES)	NO OF CASES	AVERAGE PERIOD
BURGHAUSEN W GERMANY	1933	17,21,22,25,24,13,21,32,30	9	22.77 years
ST FONS FRANCE	1939	21,28,29,37,38,27,41,34,44	9	33.22
BRIGNOUD FRANCE	1950	11,16,18,26,30,25,34,45	8	25.62
SUNDSVALL SWEDEN	1945	16,19,27,29,31	5	24.4
NIAGARA FALLS USA	1947	15,17,21,23,38	5	22.8
SPLIT YUGOSLAVIA	1950	20,20,22,23	4	21.25
MARL W GERMANY	1948	15,16,22,21	4	18.5
TAVAU FRANCE	1953	19,16,21,26	4	20.5
HILLHOUSE UK	1940	28,25,28,25	4	26.5

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TABLE 4H

LATENCY PERIOD OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE AND SPECIFIC PLANT
(4-9 CASES)

YEAR OF FIRST EXPOSURE	BURGHAUSEN W GERMANY	ST FONS FRANCE	BRIGNOUD FRANCE	SUNDSVALL SWEDEN	NIAGARA FALLS USA	SPLIT YUGO- SLAVIA	MARL W GERMANY	TAVAU FRANCE	HILLHOUSE UK
1939									
1940									
1		37,41							
2									
3		38	45						
4		44							28
5				27*					
6		29		31	15,23				
7				29					
8		28,34							
9			26,30		38				
1950						23*			
1			34	19	17				
2									
3	25,32					20	22		
4	21					22*			25
5	22,24,30	27			21				
6		21							
7	17							19	28
8			18			20			
9			16,25						
1960	21								
1							15,16		
2							21	26	
3								16,21	25
4				16					
5			11						
6									
7									
8									
9	13								
1970									
1									
2									

*Monomer worker

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(Review Date - 1 Jan 1989)

TABLE 5

Annual Incidence of ASL Cases (Date of Death) by Geographical Area

	Western Europe	North America	Rest of World	Annual Total	Cumulative Total	Key Events
1955		1		1	1	
7		1		1	2	
1961		1		1	3	
2		1		1	4	
4		1	1	2	6	
7	1			1	7	
8		5		5	12	
9	1	2		3	15	
1970	1	1		2	17	Viola
1	1	2		3	20	
2	4	1		5	25	
3	1	4	3	8	33	Maltoni
4	3	2	-	5	38	Goodrich
5	6	4	1	11	49	
6	6	3	2	11	60	
7	6	3		9	69	
8	7	2	1	10	79	
9	5	-	-	5	84	
1980	6	4	-	10	94	
1	5	0	-	5	99	
2	1	2		3	102	
1983	7	3		10	112	
1984	5	2		7	119	
1985	5		1	6	125	
1986	4	1		5	130	
1987		3		3	133	
1988	4			4	137	
TOTAL	79* **	49**	9	137		

* Includes G03 aerosol can filler but omits It 01 bag extruder

** Does not include the following who are still alive, so far as known: Fr15 22, 23 & 24, G31 & 32, US33 & 36

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(Review date 1 January 1989)

TABLE 6

ASL CASE NUMBERS BY YEAR OF DEATH AND GEOGRAPHICAL LOCATIONS (EXCLUDING It.01)

KEY EVENTS		WESTERN EUROPE	NORTH AMERICA	REST OF WORLD
	1955		C1	
	6			
	7		C2	
	8			
	9			
	1960			
	1		US8	
	2		C3	
	3			
	4		US5	Cz2
	5			
	6			
	7	F1		
	8		C4,C5,US4,US7,US10	
	9	G1	US12,US16	
Viola	1970	Sw1	US11	
	1	G2	C6,US2	
	2	N1,Sw2,UK1,It2	C7	
Maltoni	3	G3**	C8,US1,US3,US23	Y1,Y2,Cz1
Goodrich	4	G4,G5,UK3	C9,US13	
	5	F2,F3,G6,G7,G8,It3	US6,US9,US18,US26	Jap1
	6	B1,F4,F5,F6,F7,Sw3	US19,US20,US22,	Jap2,Y3
	7	F8,F9,G10,G11,G12,Sw4	C10,US21,US24*	
	8	F10,F11,G9,G13,G15	US27,US28	Y4
		G16,G17		
	9	F12,F13,UK4,UK5,G18		
	1980	UK6, UK7,G19,Sw5,G20,G21US	US17, US29, US30,US32	
	1	It4,F14,UK8,G22,G23		
	2	G26	US31,C12	
	3	UK09,It5,F17,B2,G24,G25,G30	US35, US34, US38	
	4	UK10, F16, F18, G27,G29	US37,US39	
	5	UK11, UK12,F19,F20,G28		Jap3
	6	F21,UK13,It6,It7	C11	
	7		US40,US41,C13	
	8	F25,UK14,UK15,UK16		
	Total	79***	49***	9

* Cholangiosarcoma

** Aerosol can filler

*** Does not include the following who are still alive, so far as known:

Fri15, 22, 23 & 24, G31 & 32, US33 & 36

(Review date 1 January 1989)

TABLE 7

ASL CASE NUMBERS BY YEAR OF FIRST EXPOSURE AND GEOGRAPHICAL LOCATION
(EXCLUDING It.01)

KEY EVENTS		WESTERN EUROPE	NORTH AMERICA	REST OF WORLD
	1939		US24*	
	40			
	1	Fr11, Fr16	C3, US27	
	2		US13, US29, US40	
	3	Fr14, Fr24***	C2, US19, C11	
	4	UK1, Fr23***	C1, C5, US5, US7, US28, US35	
	5	Sw2	C4, US3, US9, C12	
	6	Fr1, Fr3, Sw4	C7, C9, US8, US11, US21, US31	
	7	Sw3	C6, US22, US26	
	8	Fr9, Fr17	US1	
	9	Fr12, Fr4	US12, US41	
	50	Fr7, N1, UK8, UK9	US16	Y2, Cz2
	1	Sw1, UK5, Fr20, G30	US10, US32	
	2	G3**	US4	
	3	G15, It3, G26, G31***	C10, US37	Jap1, Y1
	4	G7, G8, UK4, G19	US18, US33***	Y3
	5	G11, G16, G18, Fr15***	US2, US17, US20, US34	
		G23, G28, G32***		
	6	FR10, G1, UK15	US36***	
	7	Fr8, G4, It2, G2, UK12	C13	Cz1
	8	Fr6, B1, Fr22***, It7	US23	Jap2, Y4
	9	Fr2, It4, Fr19, Fr21		
	60	G5, G13, G25, G28, It6	US39	
	1	G9, G10, G12, G17, G20, G22	C8	
	2	G6, UK6, G21, B2, G29, Fr25	US6	
	3	Fr13, UK7, Fr18, UK16	US38	
	4	Sw5	US30	
	5	Fr5, UK11		Jap3
	6	UK3, UK10, UK14		
	7	It5		
	8	UK13		
	9	G24		
Viola	70			
	1			
	2			
Maltoni	3			
	Total	85	51	9

* Cholangiosarcoma (US24)

** Aerosol can filler (G3)

*** Fr15, 22, 23 & 24, G31 & 32, US33 & 36 are still alive, so far as known

TABLE 8
WESTERN EUROPE PVC PRODUCERS - START-UP DATES vs ASL CASES (OMITTING Q03 & It.01)

START-UP YEAR	COUNTRY NAME	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st Exposure
1931	West Germany	BASF	Ludwigshafen		
1933	West Germany	Wacker	Burghausen	104,07,11,15,23,24	57,54,55,53,55,69,60,53
				25,31,32	155
1938	Italy	Montecatini	Acna		
1939	France	Rhone-Poulenc/ Chloe/Atochem	St Fons	103,09,10,11,14	146,48,56,41,43,
				15,16,17,23	155,41,48,44
1940	United Kingdom	ICI/EVC	Runcorn (Closed 1948)		
	United Kingdom	ICI/EVC	Hillhouse	101,04,12,16	144,54,57,63
1945	Sweden	Kemnord/Nobel	Sundsvall(Stockvik)	101,02,03,04,05	151,45,47,46,64
1946	France	Rhone-Poulenc	Roussillon	101	146
1948	United Kingdom	BP Chem/ICI/EVC	Barry	103,05,06,07,08,09	166,51,62,63,50,50
				10,11,13,14,15	166,65,68,66,56
	West Germany	CWH/Huls	Marl	109,10,26,29	161,61,53,62
1949	Belgium	Solvay	Jemeppe	101,02	158,62
1950	France	PCUK/Atochem	Brignoud	102,04,05,06,12,19	159,49,65,58,49,59,
				120,24	151,43
	France	Rhone-Poulenc/ Chloe/Atochem	St Auban	107,22	150,58
	Holland	Shell	Pernis, Rotterdam		
	Norway	Norsk	Heroya, Porsgrunn	101	150
1951	Switzerland	Lonza/ICI/EVC	Sins		
1952	Italy	Montedison/ Moplefan	Terni	107	158
	Italy	Montedison/EVC	Porto Marghera	102,06	157,60
1953	Austria	Halvic/Solvay	Hallein		
	France	Solvay	Tavaux	108,13,18,25	157,63,63,62
	Italy	Solvay	Ferrara	103	153
	Spain	Rio Rodano	Hernani		
	United Kingdom	BXL/BIP/NORSK	Aycliffe		
	West Germany	Hoechst	Gendorf	118	155
1954	West Germany	Dynamit	Troisdorf	101,02,08,12,16,17	156,57,54,61,55,61,
				19,20,21,22,27,30	154,61,62,61,55,51
1955	Spain	Monsanto Iberia	Monzon		
1956	Spain	Calqsa	Sabinanigo		
		Hispavic/Solvay	Torrelavega		
1958	West Germany	Solvay	Rheinberg		
1960	Italy	S C Ravenna/EVC	Ravenna	104	159
	West Germany	Lonza/ICI/EVC	Waldshut	106,13,28	162,60,60
1961	Italy	Montedison/EVC	Brindisi		
1962	Portugal	Cires	Oporto		
1965	France	Rhone-Poulenc	Montlucon	121	159
	Italy	Pozzi	Ferrandina		
	Italy	Pensac	Mira, Venice	105	167
	West Germany	Wacker	Cologne		
1966	West Germany	Hoechst	Knapsack(Frankfurt)	105*	160
1967	France	Atochem	Balan		
	Spain	Rio Rodano	Miranda de Ebro		
	Greece	Eso Pappas	Diavata Salonika		
1968	Belgium	Badiphil	Antwerp		
1969	United Kingdom	Vinatex/Norsk	Staveley		
	Italy	Rumanica/EVC	Cagliari Sardinia		

Continued

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Table 8 - Continued

WESTERN EUROPE PVC PRODUCERS - START UP DATES vs ASL CASES (OMITTING G03 & It.01)

START-UP YEAR	COUNTRY NAME	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st Exposure
1970	Italy	SIR	Porto Torres Sar		
	United Kingdom	ICI/EVC	Runcorn		
1971	Spain	Hispanic/Solvay	Martorell		
	Sweden	Kemanord/Norsk	Stenungsund		
	United Kingdom	BP Chem	Baglan Bay		
1972	Finland	Pekema	Svartback		
	Holland	DSM	Beek Limburg		
1976	France	Soc Art D'vinyl (CDF)	Mazingarbe		
1977	Spain	Monsanto Iberia	Tarragona		
1982	West Germany	ICI/EVC	Voslapp Wilhelmshaven		

* Laboratory worker in Research Department

(Review date 1 January 1989)

TABLE 9

USA PVC PRODUCERS - START-UP DATES vs ASL CASES

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
1939?	*UCC	S Charleston	07,13,19,21,24, 27,28,29,31,35	44,42,43,46,39, 41,44,42,46,44
	Dow	Midland (made Saran copolymer)		
1940?	*BFG	Louisville	01,02,03,04,05, 06,09,16,17,22, 26,33,34,37,40	48,55,45,52,44, 162,45,50,55,47, 47,54,55,53,42
1946	*UCC/Dow	Texas City (Partially closed 1977)		
1947	Goodyear	Niagara Falls	08,10,11,20,41	46,51,46,55,49
1948	Firestone/ Occidental	Pottstown	12	49
	Uniroyal	Painesville (closed 1975)		
1950	Monsanto	Springfield (Closed 1975)	32	51
1952	Dow	Midland (No PVC since c 1975)		
	BFG	Avon Lake	18	54
1953	Diamond/BFG	Deer Park		
1954	General Tire/ ** DiversiTech	Ashtabula (Closed 1984. Reopened 1986 by Vygen)	36	56
1956	Air Products	Pensacola (Pace)		
	Atlantic Refining	Brooklyn (Closed late 1960s)		
	Borden	Leominster (Closed 1984)		
	Conoco	Hebronville (Closed 1975)		
	BFG	Niagara		
	Great American Plastics	Fitchburg (Closed 1983)	23	58
	Hooker	Hicksville (Closed 1980-81)		
	Pantasote	Passaic (Closed 1984)	39	60
1957	Atlantic Tubing	Cranston (Closed 1967)		
	Tenneco/ Occidental	Flemington NJ (Closed 1985)	30	59
1958	Keysor Century	Saugus, Cal		
	Air Products	Calvert City (Paducah) (Closed March 1982 Re-opened October 1983)	38	63
1960	BFG	Long Beach, Cal (No PVC now. Formerly shown as Watson)		
	Borden	Illioopolis		
1962	Tenneco/Occidental	Burlington NJ		
1963	Conoco/Vista	Aberdeen, Miss		
	Stauffer	Long Beach, Cal (Closed 1982)		
1965	Conoco/Olin	Assonet, Mass (Closed by Olin 1975)		
	Ethyl	Baton Rouge (Closed 1984)		
1966	Diamond/Georgia Gulf	Delaware City		
	Gen Tire/Pantasote	Mt Pleasant W Va (Closed 1982)		
	BFG	Henry, Ill		
	Stauffer/Formosa	Delaware City (Sold to Formosa 1981)		
1967	Allied/Robintech/ Georgia Pacific	Painesville, O. (No PVC made by Robintech. GP converted to polystyrene)		
	Hooker/Occidental	Burlington NJ		
1968	Firestone/Occidental	Perryville (Closed 1982)		

TABLE 9 (Continued)

USA PVC PRODUCERS - START-UP DATES vs ASL CASES

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
1969	BFG	Pedricktown NJ		
	Goodyear/BFG	Plaquemine		
1971	Conoco/Vista	Oklahoma City		
1972	Nat Starch	Meredosia, Ill		
1973	Borden	Springfield		
1974	Atlantic Tubing/ Tallyrand	Cranston RI (Closed 1982)		
	Shintech	Freeport, Tex		
1975	Certain-teed	Lake Charles		
	Georgia Pacific/ Georgia Gulf	Plaquemine, La		
	Tenneco/Occidental	Pasadena, Tex		
1979	Firestone/ Occidental	Addis (formerly shown as Plaquemine)		
1983	Formosa	Point Comfort, Tex		
1986	Vygen	** Ashtabula, Ohio		

* My databank has no information on UCC before 1946 or BFG before 1950

** Refer to same plant at Ashtabula, bought by Vygen from DiversiTech.

NB Some of the plants in this list were closed down, some have changed ownership over the years, some have changed their product.

(Review date 1 January 1989)

TABLE 10

CANADIAN PVC PRODUCERS - START-UP DATES vs ASL CASES

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
1943 (1941?)	Goodrich (Formerly Gulf) (Formerly Shawinigan Chemicals) (Formerly Canadian Resins & Chemicals)	Shawinigan	01,02,03,04,05 06,07,08,09,10, 11,12	44,43,41,45,44, 47,46,61,46,53 43,45
1951	Monsanto	La Salle (Closed 1975)		
1957	Goodrich	Welland (Niagara)	13	57
1966	Esso (Imperial Oil)	Sarnia		
1979	Diamond Shamrock Alb/ BF Goodrich	Fort Saskatchewan		

(Review date 1 January 1989)

TABLE 11

EASTERN BLOC PVC FACTORIES - START-UP DATES vs ASL CASES

START-UP YEAR	COUNTRY NAME	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st Exposure
Pre 1939	East Germany	State Company	Schopau		
1941	Russia	State Comps	Vladimir et al		
1950	Yugoslavia	Jugo Vinyl	Split	01,02,03,04	53,50,54,58
1951	Czechoslovakia	State Comps	Novaky	01,02	57,50
1955	East Germany	State Comps	Bitterfeldt		
1956	Rumania	State Comps	Icechim		
1957	Poland	State Comps	Osweicim (Dwory)		
	Rumania	State Comps	Tirnaveni		
			Turda		
1958	Rumania	State Comps	Risnov		
1959	Hungary	State Comps	Berente Borsod		
1961	Rumania	State Comps	Borzesti		
1963	Yugoslavia	Ohis	Skopje		
1965	Bulgaria	State Comps	Varna		
1967	Poland	State Comps	Tarnow		
1969	Russia	State Comps	Djerjinsk		
1970	Rumania	State Comps	Rimnicu Vilcea		
	Russia	State Comps	Volgograd		
1972	Yugoslavia	Vinilplastika	Zadar		
1975	Czechoslovakia	State Comps	Neratovice		
	Russia	State Comps	Kalush Area		
1976	Yugoslavia	Hip	Pancevo		
1977	Rumania	State Comps	Rimnicu Vilcea		

(Review date 1 January 1989)

TABLE 12

JAPANESE PVC PRODUCERS - START-UP DATES vs ASL CASES

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
1950	Chisso Corp	Minamata		
	Kanegafuchi Kag	Osaka	02	58
	Tekkosa	Sakata		
1951	Mitsui Toatsu	Nagoya	01, 03	53, 65
1952	Mitsubishi Mon	Yokkaichi		
	Sumitomo Kag	Kikumoto		
1951	Denki Kagaku	Shibukawa		
	Nippon Zeon	Kambara		
	Toa Gosei	Tckushima		
1955	Ryo-Nichi	Uozu		
1956	Nippon Zeon	Takoaka		
	Nisshin Kagaku	Takeo		
1957	Kureha Kasei	Nishiki		
	Shinetsu Kag	Naoetsu		
1960	Denki Kagaku	Ohmi		
	Kanegafuchi Kag	Takasago		
1964	Chisso Corp	Chiba		
1966	Tokuyama Seksui	Tokuyama		
1967	San Arrow Kagak	Tokuyama		
	Sumitomo Kag	Chiba		
1968	Ryo-Nichi	Mizushima		
	Shinetsu Kag	Tokuyama		
1970	Chisso Corp	Mizushima		
	Denki Kagaku	Goi (Chiba)		
	Kanegafuchi Kag	Kashima		
	Kawasaki Yuki	Kawasaki		
	Mitsui Toatsu	Sakai		
	Nissan Kagaku	Chiba		
	Shinetsu Kag	Kashima		
1971	Tekkosa	Yokkaichi		
1973	Asahi Glass	Hayatsuki		
1974	Toyo Soda	Sakata		
		Yokkaishi		
1975	Central Kagaku	Kawasaki		
	Toyo Soda	Yokkaichi		
1977	Unknown	Kashima		

(Review date 1 January 1989)

TABLE 13

SOUTH AND CENTRAL AMERICAN PVC PRODUCERS

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
1953	Monsanto Mexica	Lecheria (Mexico)		
1954	Policyd	Mexico City (Mexico)		
1955	Geon Do Brazil	Sao Paulo (Brazil)		
1956	Elchlor/Solvay	Sao Caetano (Brazil)		
1960	Electrochlor	Capitan Bermudez (Argentina)		
	Viplastic	Mendoz (Argentina)		
1961	Indupa	Cinco Saltos (Argentina)		
1965	PET Columbiana	Cartagena (Colombia)		
1966	Carburo De Col	Medellin (Colombia)		
1967	Plasticos Omega	Mexico		
	SOC Paramonga	Paramonga (Peru)		
1968	Primex	Puebla (Mexico)		
1970	Policasa	Managua (Nicaragua)		
	Petro Dow	Conception (Chile)		
1971	Polimeros Mex	St Martin Puebla (Mexico)		
1975	Rico Chemicals	Guyanilla (Puerto Rico)		
1976	Petroplas	EL Tablazo (Venezuela)		
1977	Indust Resistoc	Tlaxcala (Mexico)		
1978	Huls Brasil	Cubato (Brazil)		
	Polychem	El Salvador		
	Policyd	Coatzacoalcos (Mexico)		
1979	PET Camacari	Camacari Bahia (Brazil)		

(Review date 1 January 1989)

TABLE 14
AUSTRALASIAN PVC PRODUCERS
START-UP DATES

START-UP YEAR	COMPANY NAME	LOCATION	ASL CASE NUMBER	YEAR OF 1st EXPOSURE
Mid 1950s	ICI Australia	Botany, Sydney		
1960s	B F Goodrich	Melbourne		
Late 1970s	ICI Australia	Laverton Melbourne		

(Review date 1 January 1989)

TABLE 15
MIDDLE EASTERN PVC PRODUCERS
START-UP DATES

START-UP DATE	COUNTRY NAME	COMPANY NAME	LOCATION
Sept 1986	Saudi Arabia	National Plastic Company (Ibn Hayan)	Arabian Petrochemical Company Madiant Al-Jubail Al-Sinahyah

ICI CHEMICALS & POLYMERS

[illegible]

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