

Liver Angiosarcoma Cases

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JS/MJT/D-58
 1 May 1980

0100288

Torkelson
Modified 1/9/81
Telephone Call
To Stafford

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

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LIVER ANGIOSARCOMA CASES (REVIEW DATA - 1 MAY 1980)

<u>Table Sequence</u>		<u>Acknowledgements Significant Changes & Comments</u>
Belgium	1	1 Page 11 - German Case 13 - In the 8 January listing I did not notice a typographical error. This man was born <u>1904</u> and not <u>1914</u> . This error is corrected in the present issue.
Canada	2-3	
Czechoslovakia	4	2 At the OSHA/NIOSH/NIENS Symposium at Bethesda on 20/21 March 1980 Dr H WEBER of Der Staatliche Gewerbearzt stated that there were now 17 confirmed ASL cases in W Germany. I presume cases 13 and 14 are now histologically confirmed. Perhaps Dr Friedel or Mr Emminger would care to comment and also give me the data I don't yet have on case 14.
France	5-7	
Germany	8-11	
Italy	12	
Japan	13	3 In the 8 January issue, I commented that, after a long interval without any cases, the UK had had two new cases bringing the total to 4. This total unfortunately became five on 9 January! It is curious that the five UK cases should have occurred 1 in 1972, 1 in 1974, 2 late in 1979 and 1 early 1980.
Norway	14	
Sweden	15	
UK	16-17	4 As a continuation of the above point 3, no one has commented to me on Table 5 and the geographical split of ASL deaths. I would repeat my questions. Have North American ASL deaths tapered off? Or is this just a temporary lull? Are West European ASL death rates increasing? North America started to have ASL deaths a decade before W Europe. Has North America peaked out and (hopefully) finished before W Europe.
USA	18-22	
Yugoslavia	23	
Incidence of Cases pa (Table 1)	24	5 We still do not have any answers to the bizarre clustering of cases in certain factories. Even the distribution of "clusters" is peculiar. Table 3 confronts us with the question why so few plants in N America have been affected while the ASL cases are more evenly and broadly distributed over W Europe plants.
Distribution of Cases by Country (Table 2)	25	
Pattern of Cases by Factory (Table 3)	26	
Latency Periods (Table 4)	27	
Annual Geographical Incidence (Table 5)	28	

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IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

Page 1

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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>BELGIUM</u>															
01		12.01.13	Solvay	Jenepps	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 autoclaves 1968-1972 exposed to 50-200 ppm 8 hrs per day, in 25m autoclaves 1972-1974 exposed to 50-200 ppm in auto- clave room 1974-1980 ppm 1975- 50 ppm RETIRED 1 Feb 1975	Autocleaner 14 yrs Polyworker 3 yrs	Driller in a foundry (2 yrs) Farmer (15 yrs) Work in glass ind. & chemical 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 601-622

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LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

* All dates use UK system
DAY - MONTH - YEAR
** Data published in Journal of
Occ Med 1978 pages 338-340
*** Many of dates altered to fit NIOSH 31/3/77 list

Canada
Sheet 1

Page 2

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	10	11	02.09.55	Yes		Reactor cleaner	Operator polymerisation	Smoker
02		06.03.14			1943	1957	45	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	18.04.71	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		13.05.20			1941	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

Page 4

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IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONFrance
Sheet 1

Page 5

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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	Roussillon	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° 3 Nov 75 p 171-177
02	SIN	03.06.11	PCUK	Brignoud	06.07.59	15.01.75	63	16	12	24.01.75	Yes (NIOSH no comment)	High	2 yrs on monomer 10 yrs on polymer- ization	Italian origin	Ref. G Bonneton et al "Nouvelle presse medicale" 5 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 3 yrs	VCM production 16 yrs Italian POW Shepherd, Sawyer, Mason	Ref. Rety et al Arch. Mal. Prof. 1 37 n° 6 June 71 p 551-555
04	HOR	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	PCUK	Brignoud	18.01.65	13.05.76	38	11	11	13.05.76	Yes	High	Polyworker 11 yrs		Ref. P Couderc et al "Semaine des hopitaux" 10 Septembre 1976 Previously had bone angiosarcoma

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONFrance
Sheet 2

Page 6

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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	PCUX	Brignoud	01.03.58	12.08.76	42	18	13	11.09.76 (NIOSH says 12.09.76)	Yes	Moderate	(1958-1960) 2 yrs filtration 10-11 yrs polyworker and works lab!		This man had AOL prior to AS. Ann. de Med. Prof. July '77 p 643 & 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 septicaemia Small liver lesion found after autopsy
08	R	01.04.34	Solvay	Taveux	23.05.57	03.12.75	42	19	19	30.01.77	Yes	Moderate	6 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	62	28	28	16.12.77	Yes	High	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

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONFrance
Sheet 3

Page 7

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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>France</u>															
10	VP	24.05.19	RP	St Fons	00.12.56	00.01.78	58	21	21	00.01.78	Yes	High	Autoclave cleaner	10 yrs in mechanical engineering industry 1946-1956	Died of pulmonary embolism 5 days after surgery
11	L	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 (ICI 6 Acetylene) Foreman (agent de maîtrise) 1972 retired	* General Comment At AFHR mtg of 9 June 1978 Mr J C Thomas reported that 8 out of the 10 French cases had been involved in plant start-up and 3 out of 10 had been in combined VCM and PVC plants where VCM made from acetylene. (In his letter of 1 February 1979 Mr J C Thomas confirms that Cases 2, 3, 4, 6 and 11 had worked in monomer as well as polymer)	
12		16.08.14	PCUK	Brignoud	09.02.49	00.03.79	63	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			Autocleaner 2 yrs, Auto- operator 9 yrs, Copolymers 4 yrs	2 yrs as cycle mechanic. 10 yrs as enameller in sanitary ware manufacture	Cigarette smoker until 1974. Ill all of 1977 due to Oesophageal varices. Surgical intervention 25.05.79 (right hepatectomy)

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONGermany
Sheet 1

Page 8

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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>GERMANY</u>															
01		00.00.30	Dynalut	Trolsdorf	01.10.56	19.09.68	38	12	12	25.01.69	Yes (NIOSH)		Polyworker		
02		00.00.31	Dynalut	Trolsdorf	14.10.57	25.09.70	39	13	11	14.12.71	Yes (NIOSH)		Polyworker		
03		00.00.30	Dynalut	Rheinfel- den	09.06.52	00.03.73	43	21	16	10.10.73	Yes (NIOSH)		Filling pesticide aerosol cans with VC		Reported under non polymer- isation workers in NIOSH list of 31.3.77. This of course is strictly correct. However I wonder whether this man had high exposure to VC in his can filling operation?
04		00.00.30	Wacker	Burg- hausen	16.04.57	26.11.74	44	17	17	25.11.74	Yes (NIOSH - no comment)	200-500 ppm but high during 1 yr autocleaner	Polyworker & temporary autocleaner	1958 was autocleaner for 1 yr	Clinical details in paper by Gokel et al Virchows Arch A Path 1976 372 p 195-203

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONGermany
Sheet 2

Page 9

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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		00.00.36	Roschat	Frankfurt	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- ization workers in NIOSH list of 31.3.77 and 1.78. I don't think this is a correct classification by NIOSH. The man may have been involved in VCM polymerization in pilot plant or in main
06 (NIOSH gives as Case 05)		00.00.32	Lonza	Waldehut	16.12.62	00.00.75	43	13	12	10.01.75	Yes		PVC - Manu- facture Shift Leader		
07		00.00.26	Wacker	Berg- hausen	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	Dynamit	Troisdorf	19.07.54	06.04.75	50	22	21	25.12.75	Yes	?	Polyworker	?	

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

Germany
Sheet 3

Page 10

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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	CVR	Merl	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 9 yrs 150 ppm, occ >1000 ppm. Next 3 yrs av. 75 ppm. Last yr av 35 ppm
10 (NIOSH gives as Case 11)		00.00.36	CVR	Merl	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 9 yrs 150 ppm, occ 1000 ppm. Last yr av 75 ppm. CVR letter of 21.04.78
11 (NIOSH gives as Case 10)		00.07.29	Wacker	Berg- hausen	10.10.55	28.06.77	47	22	21	28.06.77	Yes	High	3 yrs auto- clave cleaner 19 yrs filter operator		
12		00.00.38	Dynalit	Troisdorf	00.00.61	00.10.77	39	16	6	07.10.77	Yes	?	PVC Manu- facture Autoclave worker for 6 yrs		

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

Germany
Sheet 4

Page 11

LIVER Angiosarcoma Cases - (Review Date: 1 May, 1980)

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		00.00.04	Lonza	Waldshut	00.00.60	08.04.78	64	18	14	19.05.78	No*				Not yet confirmed
14		00.00.27	CMI	Harl	03.12.56	at death?	51?	22?	17	29.07.78	No*				Not yet confirmed
15		00.00.29	Hacker	Borghausen	19.10.53	09.10.78	49	25	20 (VKI says 25)	23.10.78	Yes	?	Autoclave cleaner and worker. Drier operator. Later shift leader		Angiosarcoma confirmed 09/79
16		00.00.33	Dynamit	Troisdorf	10.01.55	07.08.78	44	23	20	07.08.78	Yes	High	Autoclave worker till 1964. Leader and master		Angiosarcoma confirmed
17		00.00.37	Dynamit	Troisdorf	01.11.61	14.08.78	41	16	11	28.08.78	Yes	High	Autoclave worker	No	Angiosarcoma confirmed

* At the NIOSH/CDC ICHS Symposium in Bethesda 20/21 March 1980 Dr Heber said there were now 5 confirmed cases in Germany. I presume cases 13 and 14 are now histologically confirmed.

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PLASTICS DIVISION

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

* Should this case be removed from the list? NIOSH have it on their supplementary list relating to non-polymerisation workers.
J9 1/8/77

Page 12

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IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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>JAPAN</u>															
01	Tomeji Mori	01.08.22	Mitsui Toatsu (no comment by Jap PVC Assoc)	Nagoya	00.04.53	24.10.75	53	22	13	24.10.75	Yes	PVC Assoc says not known. A 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 PVC Assoc letter of 31.03.78
02	SO	02.08.39			00.11.58	10.08.76	37	17	13	10.08.76	Yes	Not known	In polymer- isation work including autoclave cleaning		Japanese PVC Association letter of 31.03.78

CASES NOT YET CONFIRMED

	Shizuo Sato		Sub- contractor to Mitsui Toatsu	Nagoya								Reactor cleaner 1964-1974			Pre-cancerous disorder of liver Japan Times 25.10.75 not confirmed by Jap PVC Assoc
	Shigeo Tanaka		Mitsui Toatsu	Nagoya	1953	Nov 1968	43	16		14.01.69					Japan Times 27.10.75 (some figures uncertain bad print). Not confirmed by Jap PVC Assoc
	Kazuyoshi Ono		Mitsui Toatsu	Nagoya		Dec 1967	47			Dec 1967					Japan Times 27.10.75. Not confirmed by Jap PVC Assoc

R&S 103515

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

Page 14

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

Page 13

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

[illegible]

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONUK
Sheet 1

Page 16

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

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	NJ	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		
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 2.66 - 9.69
04	JBR	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 C 2/3 Plant	Pre-war fish packer 1939-45 army vehicle maintenance 1945-54 fish packer	

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONUK
Sheet 2

Page 17

LIVER Angiosarcoma Cancer - (Review Date: 1 May 1980)

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	K	30.03.14	BP	Berry	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	P	1931	BP	Berry	1962	09.01.80	48/9	18	12	09.01.80			Greaser on Poly Floor		In their supplementary list HIOSH are still quoting Case 102 from 1000 which has been discounted in the UK. 1000 spread many polymers including PVC into fabrics. The UK Government Medical Advisory Service also know of two further con- firmed ASL cases in plastics fabrication workers but it is dubious whether they ever handled PVC

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LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

*UK system of dates
DAY - MONTH - YEARUSA
Sheet 1

Page 18

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 Jans 1974) p 53		Rolling Stone Art Ref 1 NY Acad of Sc Symp 1974 Also Block Jans 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		25.05.15	BFG	Louis- ville	28.11.45	19.12.73	58	28	28	19.12.73	Yes		Pot Cleaner (Cf Block)		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

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISIONUSA
Sheet 2

Page 19

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

*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 Gottle- 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 re 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	35	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 autorlaves)	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 Park to J T Seawell of MCA
13	Richard Edward Clendenia	01.12.21	UCC	8 Charle- ston	11.12.42	00.05.74	32	32	26	07.04.74	Yes	2000 ppm			Charleston Daily Mail 21.7.75
14															Dubious fabrication case
15															Dubious fabrication case

R&S 103521

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

* UK System of dates
DAY - MONTH - YEARUSA
Sheet 3

Page 20

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?	00.05.50	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 H M Johnson ltr 07.08.78
17		06.05.31	BFG	Louis- ville?	23.06.55	11.10.74	43	19	19	Alive	Yes				Confirmed alive & BFG case in H M Johnson ltr 07.08.78
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 & yrs on Estol plasticiser & Carbonet operation	Navy Tyre Store		Confirmed in H M 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 (latest NIOSH says alive)	Yes	2000 ppm			Williamsport Sun Gazette 21 June 1975 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 Winkle	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

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION
LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

USA
Sheet 4

Page 21

*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	Is this BPG?	Is this 10th Louis- ville victim?	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 Kelle Lane of whom 8 had died by 26.1.76
23		00.00.23	Great American Chemical Company	Fitchburg Mass.	08.09.58	06.04.73	50	15	14	06.04.76	Yes				
(24) Remove from Register. Not an ASL Case	Charles Edward Moore	17.05.17	UCC	8 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	1941-65 non- solvent vinyl resin unit and dispersion vinyl resins unit first as fitter helper, then shift utility man	1937-39 was off and on labourer 1939-41 may have been exposed as reactor cleaner 1943 became shift fitter 1946 became shift utility man 26.04.65 employment was terminated	M H Wheeler letter of 18.8.77 to J Stafford gives details Rose Kaminski letter of 26/2/79
(25) NIOSH may remove from register		07.08.10	?	?	00.02.47	10.03.77	67	30	20	10.03.77	No NIOSH may move from their register				R H Wheeler letter of 20/2/79 and Rose Kaminski letter of 26/2/79

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PLASTICS DIVISION

LIVER Angiosarcoma Cases - (Review Date: 1 May 1980)

*UK system of dates
DAY - MONTH - YEARUSA
Sheet 5

Page 22

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 Barry	07.07.23	BPC	Louis- ville	03.10.47	00.00.77 (up to 2 years after death)	32 (death)	28 (death)	18	11.02.79	Yes	Exposed to 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. Ill August 1965. Terminated employment Jan 1966		R Kaminski letter of 26/2/79 and Prof. Tamburro letter of 9/1/79
27	J L Torreot	11.05.16	UCC	B Charle- ston	01.07.41	30.11.78	62	37	20 (NIOSH says 27 and C Daily Mail 25)	23.11.78	Incomplete (NIOSH now says con- firmed)	High	Operator to 10.10.76	Exposure in bulk and dispersion PVC manufacture	R N Wheeler ltr of 4 Jan 1979 and Charleston Daily Mail 30.11.78 and R Kaminski 26/2/79
28		11.04.17	UCC	B Charle- ston	1944	1977	61	33	33	03.11.78	Yes				R Kaminski letter of 6/4/79

TABLE 1Incidence of ASL Cases Per Annum

	<u>By date of diagnosis</u>	<u>By date of death</u>
1955	1	1
6	0	0
7	1	1
8	0	0
9	0	0
1960	0	0
1	1	1
2	1	1
3	0	0
4	1	1
5	0	0
6	1	1
7	3	1
8	4	5
9	2	3
1970	4	2
1	2	3
2	4	5
3	9	6
4	7	6
5	10	11
6	13	12
7	7 (excluding 2 Removals)	8 (excluding 2 Removals)
8	8	10
9	4	4
1980	1	1
Total	<u>84</u> (excluding 2 Removals from US list + 2/3 vague Japanese cases)	<u>83</u> (excluding 2 removals from US list + 2/3 vague Japanese cases)

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

2 Does not include Japanese suspect cases. Since post mortem examinations are rare events in Japan, confirmation of ASL is a problem as indeed is its discovery.

TABLE 2Distribution of ASL Cases by Country

USA	24 ***
Canada	10
W Germany	17 **
France	13
Sweden	4 ****
Yugoslavia	3 *****
Italy	2 *
UK	5
Czechoslovakia	2
Norway	1
Belgium	1
Japan	2

Total 84 (allowing for 2 removals from US list due to mis-diagnosis and omitting 2/3 ill defined Japanese cases reported some years ago in Japanese newspapers).

* Omit It01 - atypical case of PVC bag extruder.

** Includes GE03 aerosol can filler.

*** Includes US17 - man still alive after ASL diagnosed 11.10.74 but removes Cases 24 and 25 where ASL not confirmed.

**** Includes one monomer worker.

***** Includes two monomer workers.

i.e. North America
Western Europe
rest of World

34 (excluding 1 alive and 2 earlier cases removed)

43 (includes G03 aerosol can filler)

7 (excluding 2/3 suspect cases)

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

Of the 43 cases in W Europe, 35 have occurred in clusters at 10 factories. Of the 17 German cases, 15 have occurred in clusters at 4 factories.

	<u>ASL Cases</u>
Kemanord, Sundsvall	4
PCUK, Brignoud	5
Dynamit, Troisdorf	6
RP, St Fons	4
Wacker, Burghausen	4
CWH, Marl	3
ICI, Hillhouse	2
BP, Barry	3
Solvay, Tavaux	2
Lonza, Waldshut	2
	<u>35</u>

(b) N America

Of the 34 cases in N America, 31 have occurred at four factories out of a total of 53 factories - in N America 46 plants have not had ASL cases.

	<u>ASL Cases</u>
BFG, Shawinigan	10
BFG, Louisville	11
UCC, S Charleston	6
Goodyear, Niagara	4
	<u>31</u>

(c) Rest of World

The 7 ASL cases are believed to be in 1 cluster of 3 and 2 clusters of 2 cases.

TABLE 4

Latency Periods (Years from first Exposure to Diagnosis)

	<u>W Europe</u>	<u>No of Cases</u>	<u>Total Years</u>	<u>Average</u>
	Belgium	1	18	18
	France	13	298	22.9 *
	Germany	17	305	17.9 *
	Italy	2	37	18.5
	Norway	1	22	22
	Sweden	4	106	26.5
	UK	<u>5</u>	<u>108</u>	<u>21.6</u>
		<u>43</u>	<u>894</u>	<u>20.8</u>
<u>N America</u>				
	US	24	557	23.2 *
	Canada	<u>10</u>	<u>204</u>	<u>20.4 *</u>
		<u>34</u>	<u>761</u>	<u>22.38</u>
<u>Rest of World</u>				
	Czechoslovakia	2	31	15.5
	Japan	2	39	19.5
	Yugoslavia	<u>3</u>	<u>65</u>	<u>21.7</u>
		<u>7</u>	<u>135</u>	<u>19.3</u>
<u>Summary</u>				
	W Europe	43	894	20.8
	N America	34	761	22.38
	Rest of World	<u>7</u>	<u>135</u>	<u>19.3</u>
		<u>84</u>	<u>1790</u>	<u>21.3</u>

* Of the countries with > 10 cases, France and USA have average latency period above world average and Germany well below.

TABLE 5

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

	Western Europe	North America	Rest of World	Annual Total
1955		1		1
7		1		1
1961		1		1
2		1		1
4		1		1
6			1	1
7	1			1
8		5		5
9	1	2		3
1970	1	1		2
1	1	2		3
2	4	1		5
3	1	3	2	6
4	3	2	1	6
5	6	4	1	11
6	6	4	2	12
7	6	2		8
8	8	2		8 10
9	4			4
1980	1	2		4
	*43	33	7	83

4 (one 1 note for 6)
85 or 86 Worldwide

* Includes G03 aerosol can filler but omits 1t 01 bag extruder