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Chemicals and  
Polymers  
Group

Hillhouse  
Site

*DLS*  
*File Vinyl Chloride*  
*EVS*

To all recipients of  
the ASL Register

RECEIVED

MAR 09 1987

INDUSTRIAL TOXICOLOGY

Your ref

Our ref

BB/BGS

Date Feb 1987

Dear Colleague

RESEARCH INTO ASL

I am enclosing the latest edition of the ASL Register, dated February 1987, and am writing to ask for your co-operation with some research into ASL.

While in the States recently, I visited Professor Carlo Tamburro, Professor of Medicine & Community Health; Acting Chairman, Department of Community Health; Chief, Division of Occupational Health; Director, Liver Research Centre, University of Louisville, Kentucky. We discussed VC clustering, and why some particular Plants, which have been manufacturing VCM/PVC pre-1962, have never had a case of ASL.

As a result of our discussions, we had the feeling that, for ASL to develop, certain circumstances are required, and that a co-factor may be needed.

I was wondering if you would be prepared to help in identifying such a factor?

I am enclosing a pro-forma with certain chemicals mentioned, and I should be very grateful - if you are willing - if you would tick off the years in which any of the chemicals listed was used, if in fact they were used at all, and return the form to me. I would definitely communicate back to you with any results obtained, and with what conclusions Professor Tamburro and I have made. Before, however, releasing any information with reference to any of the completed questionnaires, I will contact the individual who is responsible for that questionnaire, in order to discuss that information further, and to seek an appropriate, acceptable way forward.

It should be remembered that this exercise is purely a research topic, and therefore may yield no positive results.

I look forward to hearing from you and receiving your comments.

Yours sincerely

*Bennett*

B BENNETT

M.A.

M.B., B.Ch., B.a.O.

D.Obst.R.C.O.G. D.I.H., M.F.O.M.

The ICI Chemicals and Polymers Group is part of Imperial Chemical Industries PLC  
Registered in England No. 218019 Registered Office Imperial Chemical House Millbank London SW1P 3JF

URL 02139

RESEARCH INTO ASL

Name of Company\*: .....  
.....

(\*If Company ownership has changed, please give name of previous Company and date of change.)

Address: .....  
.....

Site Location: .....

Form completed by:..... Date .....  
(Block capitals, please)

| YEAR | VINYL<br>CHLORIDE | VINYL<br>ACETATE | HEXANE | DIETHYL<br>MALEATE | PHENOL | BUTADIENE | TOLUENE | ACRYLATES |
|------|-------------------|------------------|--------|--------------------|--------|-----------|---------|-----------|
| 1939 |                   |                  |        |                    |        |           |         |           |
| 1940 |                   |                  |        |                    |        |           |         |           |
| 1941 |                   |                  |        |                    |        |           |         |           |
| 1942 |                   |                  |        |                    |        |           |         |           |
| 1943 |                   |                  |        |                    |        |           |         |           |
| 1944 |                   |                  |        |                    |        |           |         |           |
| 1945 |                   |                  |        |                    |        |           |         |           |
| 1946 |                   |                  |        |                    |        |           |         |           |
| 1947 |                   |                  |        |                    |        |           |         |           |
| 1948 |                   |                  |        |                    |        |           |         |           |
| 1949 |                   |                  |        |                    |        |           |         |           |
| 1950 |                   |                  |        |                    |        |           |         |           |
| 1951 |                   |                  |        |                    |        |           |         |           |
| 1952 |                   |                  |        |                    |        |           |         |           |
| 1953 |                   |                  |        |                    |        |           |         |           |
| 1954 |                   |                  |        |                    |        |           |         |           |
| 1955 |                   |                  |        |                    |        |           |         |           |
| 1956 |                   |                  |        |                    |        |           |         |           |
| 1957 |                   |                  |        |                    |        |           |         |           |
| 1958 |                   |                  |        |                    |        |           |         |           |
| 1959 |                   |                  |        |                    |        |           |         |           |

/Continued

URL 02140

| YEAR | VINYL<br>CHLORIDE | VINYL<br>ACETATE | HEXANE | DIETHYL<br>MALEATE | PHENOL | BUTADIENE | TOLUENE | ACRYLATES |
|------|-------------------|------------------|--------|--------------------|--------|-----------|---------|-----------|
| 1960 |                   |                  |        |                    |        |           |         |           |
| 1961 |                   |                  |        |                    |        |           |         |           |
| 1962 |                   |                  |        |                    |        |           |         |           |
| 1963 |                   |                  |        |                    |        |           |         |           |
| 1964 |                   |                  |        |                    |        |           |         |           |
| 1965 |                   |                  |        |                    |        |           |         |           |
| 1966 |                   |                  |        |                    |        |           |         |           |
| 1967 |                   |                  |        |                    |        |           |         |           |
| 1968 |                   |                  |        |                    |        |           |         |           |
| 1969 |                   |                  |        |                    |        |           |         |           |
| 1970 |                   |                  |        |                    |        |           |         |           |
| 1971 |                   |                  |        |                    |        |           |         |           |
| 1972 |                   |                  |        |                    |        |           |         |           |
| 1973 |                   |                  |        |                    |        |           |         |           |
| 1974 |                   |                  |        |                    |        |           |         |           |
| 1975 |                   |                  |        |                    |        |           |         |           |
| 1976 |                   |                  |        |                    |        |           |         |           |
| 1977 |                   |                  |        |                    |        |           |         |           |
| 1978 |                   |                  |        |                    |        |           |         |           |
| 1979 |                   |                  |        |                    |        |           |         |           |
| 1980 |                   |                  |        |                    |        |           |         |           |
| 1981 |                   |                  |        |                    |        |           |         |           |
| 1982 |                   |                  |        |                    |        |           |         |           |
| 1983 |                   |                  |        |                    |        |           |         |           |
| 1984 |                   |                  |        |                    |        |           |         |           |

Please return to: Dr Brian Bennett  
Occupational Health Department  
ICI Chemicals & Polymers Group  
Hillhouse Site  
PO Box 4 Thornton-Cleveleys  
BLACKPOOL FY5 4QD ENGLAND

WPX/ASL - RESEARCH,2

URL 02141

CONFIDENTIAL

LIVER ANGIOSARCOMA CASES

CIRCULATION OF REGISTER

|                  |                                                                        |
|------------------|------------------------------------------------------------------------|
| BAGSHAW Dr I M M | Norsk Hydro, Newton Aycliffe, UK                                       |
| BAND Dr P R      | Cancer Control Agency of British Columbia, Vancouver, Canada           |
| BARNES Jnr W C   | Monsanto, St Louis, Missouri, USA                                      |
| BARR Dr J T      | Air Products, Allentown, Pa, USA                                       |
| BARRAT Dr G      | AECRP, Commeny, France                                                 |
| BAKIER Dr Peter  | University of Cambridge, UK                                            |
| BAYLAC Dr        | Atochem, Chauny, France                                                |
| BEAUPRE M        | Government of Quebec Cancer Registry, Canada                           |
| BELLEC Dr        | Rhone Poulenc, Aubervilliers, France                                   |
| BENECH Dr M      | Naphtachimie, Lavera, France                                           |
| BENNETT Dr B     | ICI Hillhouse, UK                                                      |
| BERIAZZI Dr P    | Inst of Occupational Health, Milan University, Italy                   |
| BESCHE Dr        | Dynamit Nobel, Troisdorf, Germany                                      |
| BISHOP Dr C      | EMAS, Cardiff, UK                                                      |
| BORRELLI F E     | Georgia Gulf, Delaware City, USA                                       |
| BOYER R W        | Formosa Plastics, Delaware City, USA                                   |
| BRYSON Dr D D    | ICI Billingham, UK                                                     |
| BURGESS Mr David | ICI Americas, Wilmington, Delaware USA                                 |
| EYREN Dr David   | Kemanord, Stockholm, Sweden                                            |
| CARTER Dr J T    | EMAS, London, UK                                                       |
| CELLA Mr C       | Enichem Polimeri, Milan, Italy                                         |
| CHANCE Mr M      | ICI Runcorn, UK                                                        |
| CLAUS Mr P G     | APME, Brussels, Belgium                                                |
| CLAYTON Mr H     | Norsk Hydro, Newton Aycliffe, UK                                       |
| CONTISSOT Dr J C | Atochem, Saint-Fons, France                                            |
| DAVIES Mr J G    | ICI, Everberg, Belgium                                                 |
| DEPLAN Dr        | Atochem, Jarrie, France                                                |
| DE VOS Mr A J    | EVC, Welwyn Garden City, UK                                            |
| DIETZ Dr H W     | B F Goodrich, Akron, Ohio, USA                                         |
| DOLL Sir Richard | Imperial Cancer Research Fund, Oxford University, UK                   |
| DOMBROWSKI S L   | Dow Chemical, Midland, Michigan, USA                                   |
| DUPONT Mr G      | APME, Brussels, Belgium                                                |
| EMMINGER Mr H    | VKE, Frankfurt, Germany                                                |
| ERNST Dr W       | Berufsgenossenschaft der Chemischen Industries, Nurnberg, Germany      |
| EVANS Dr A E J   | Lever Bros, Warrington, UK                                             |
| FAIK, Dr H       | Chronic Diseases Div, US Dept of Health & Human Services, Atlanta, USA |
| FAVRE Dr         | Atochem, Montluel, France                                              |
| FERGUSON Dr D M  | ICI Americas, Wilmington, Delaware, USA                                |
| FORMAN Dr D      | Imperial Cancer Research Fund, Oxford University, UK                   |
| FRASE R W        | DiversiTech General, Akron, Ohio, USA                                  |
| FRIEDEL Dr H P   | Berufsgenossenschaft der Chemischen Industries, Heidelberg, Germany    |
| GOLBERG Prof L   | Duke Univ Medical Center, Durham, North Carolina, USA                  |
| GOSZTONYI Jnr Dr | R E Tenneco Chemicals, Piscataway, New Jersey, USA                     |
| GOTTESMAN R T    | The Vinyl Institute, Wayne, NJ, USA                                    |
| HARRIS Dr W D    | Uniroyal Inc, Middlebury, Connecticut, USA                             |
| HILL Dr G B      | Alberta Cancer Board, Edmonton, Canada                                 |
| HILLMAN Dr D W   | Diamond Shamrock Corp, Dallas, Texas, USA                              |
| HINDERER Dr R K  | BF Goodrich, Cleveland, Ohio, USA                                      |
| HOGG Dr W A      | Imperial Oil Ltd, Sarnia, Ontario, Canada                              |
| HOWARD Dr J K    | University of Otago School of Medicine, Wellington, New Zealand        |
| HUMPHRY Dr N F   | ICI Australia, Melbourne, Australia                                    |
| JAUVERT Mr J     | Chloe Chimie, Paris, France                                            |
| JERVIS Mr H R    | ICI Millbank, London UK                                                |
| JONES Dr R D     | EMAS, Bootle, UK                                                       |

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UHL 02142

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| KARRH Dr Bruce     | Dupont, Wilmington, Delaware USA                                                 |
| KORSGAARD Dr K J   | Norsk Hydro, Porsgrunn, Norway                                                   |
| KREUGER Dr R A     | BF Goodrich, Akron, Ohio, USA                                                    |
| LAGAST Dr H        | Solvay, Brussels, Belgium                                                        |
| LALOINE Dr J P     | Solvay, Brussels, Belgium                                                        |
| LANHAM Dr John     | Dow Chemical, Midland, Michigan, USA                                             |
| LANOUZIERE Dr      | Solvay, Tavaux, France                                                           |
| LAWRENCE Mr J      | SPI, New York, USA                                                               |
| LAWRENCE-JONES     | Sir Christopher, Chief Medical Officer, ICI, London UK                           |
| LEE Dr F I         | Victoria Hospital, Blackpool, Lancs, UK                                          |
| LELBACH Prof WK    | University of Bonn, West Germany                                                 |
| LEVEQUE Dr G       | ODF Chimie, AZF, Bully-les-Mines, France                                         |
| LEVISON Dr D A     | St Bartholomew's Hospital, London, UK                                            |
| LEWIS Dr P         | Chemical Industries Association, London, UK                                      |
| LOLIVIER Mr        | Solvay, Brussels, Belgium                                                        |
| LUSSATO Dr J       | Atochem, France                                                                  |
| MAILLARD Dr J M    | Suva, Luzern, Switzerland                                                        |
| MALHOTRA Anna      | Statistics Canada, Ottawa                                                        |
| MALTONI Prof C     | Institute di Oncologia, Bologna, Italy                                           |
| MARGETTS, Mr R J   | ICI Directorate, Wilton HQ, UK                                                   |
| MATIRE Prof Lo     | Medil-Aric-S, Milan, Italy                                                       |
| MATTIUSI Dr R      | Montedison, Milan, Italy                                                         |
| MIDDLETON D        | Norsk Hydro, Newton Aycliffe, UK                                                 |
| MOKKA Mr           | Neste Oy, Espoo, Finland                                                         |
| MONTESANO Dr R     | IARC, Lyons, France                                                              |
| MOTTI Dr A A       | Duperial SAIC, Buenos Aires, Argentina                                           |
| MUNOZ MOUTON Dr M  | Rio Rodano, Madrid, Spain                                                        |
| MacSWEN Prof RNM   | Western Infirmary, Glasgow, Scotland                                             |
| NAKAMURA S         | Japanese PVC Association, Tokyo                                                  |
| OLSON H G          | VC Safety Association, Louisiana, USA                                            |
| OWEN Dr R          | Trades Union Congress, London, UK                                                |
| PADDLE Dr G M      | ICI Central Medical Group, Alderley Park, UK                                     |
| PAGLIAALINGA Dr S  | Montedison, Novara, Italy                                                        |
| PAQUET Dr          | Atochem, Serquigny, France                                                       |
| PATERSON Dr J C    | ICI Runcorn, UK                                                                  |
| PIRASTU Dr Roberta | Istituto Superiore di Sanita, Rome, Italy                                        |
| POPPER Dr Hans     | Mount Sinai Medical Center, New York, USA                                        |
| POSSBERG Dr J      | Wacker-Chemie, Munich, Germany                                                   |
| FUECH Dr A M       | Atochem, Brignoud, France                                                        |
| PURDHAM Dr J       | Canadian Centre for Occupational Health & Safety, Hamilton, Canada               |
| RAMBAUD Dr J       | RP Recherches, Antony, France                                                    |
| RANGES P           | Norsk Hydro, Porsgrunn, Norway                                                   |
| RICHARD Dr P       | Rhone Poulenc, Roussillon, France                                                |
| ROBSON Mrs D       | Saskatchewan Cancer Foundation, Regina, Canada                                   |
| RODRIGUES Dr MJF   | ICI, Sao Paulo, Brazil                                                           |
| ROUSH Dr G         | Monsanto, St Louis, Missouri, USA                                                |
| RUTY Dr J          | Atochem, St Auban, France                                                        |
| SALG Dr J          | NIOSH, Cincinnati, USA                                                           |
| SARACCI Dr R       | IARC, Lyons, France                                                              |
| SCHIEFFERS Dr M L  | DSM/CVMD, Geleen, Holland                                                        |
| SCHILPPER Dr H     | University of Manitoba, Winnipeg, Canada                                         |
| SERONNE Dr D       | Diamond Shamrock, Dallas, USA                                                    |
| SHAH Dr Has        | CMA, Washington DC, USA                                                          |
| SIGRIST Dr J       | Shell Chimie, Berre L'Etang, France                                              |
| SMITH Dr E         | Division of Environmental Health, World Health Organisation, Geneva, Switzerland |
| SMITH Dr P M       | Llandough Hospital, Penarth, UK                                                  |
| SMITH Prof Allan H | University of California, Berkeley, USA                                          |
| SMITH Mr J S       | ICI Hillhouse, UK                                                                |
| SPIRTAS Dr R       | NCI/NIH, Bethesda, Maryland, USA                                                 |
| STAFFORD Dr J      | Somerset, UK                                                                     |
| STAHLNECKER Mr     | BASF, Ludwigshafen, Germany                                                      |

WPX/ASL - ASL ADDRESS,2

UPL 02143

|                     |                                                             |
|---------------------|-------------------------------------------------------------|
| TAMBURRO Prof CH    | University of Louisville, USA                               |
| ten BERGE Dr W F    | DSM, Geleen, Holland                                        |
| TENKHOFF Dr N       | Huls AG, Marl, Germany                                      |
| TER HAAR Dr Gary    | Ethyl Corporation, Baton Rouge, Louisiana, USA              |
| TERWIESCH Dr B      | Chemische Werke Huls, Kreis Recklinghausen, Germany         |
| THERIAULT Dr Gilles | McGill University, Montreal, Canada                         |
| THIESS Prof Dr A M  | BASF, Ludwigshafen, Germany                                 |
| THILS-EVENSEN Dr E  | Norsk Hydro, Porsgrunn, Norway                              |
| THOMSON Dr D H      | Cancer Treatment & Research Foundation, Halifax, NS, Canada |
| TORDOIR Dr W        | Shell, An Den Haag, Holland                                 |
| VAN DER MERWE Dr    | H J AECI, Sasolburg, South Africa                           |
| WALLACE J R         | Esso, Sarnia, Ontario, Canada                               |
| WALTEMATE H         | BF Goodrich, Cleveland, Ohio, Usa                           |
| WEJDLING S O        | Norsk Hydro, Stenungsund, Sweden                            |
| WHEELER Dr D J      | ICI Hillhouse, UK                                           |
| WHEELER R N         | Union Carbide, South Charleston, USA                        |
| WHITE K H           | Duperial, Buenos Aires, Argentina                           |
| WILINSKI O          | Electrochemical Industries, Acre, Israel                    |
| WILLIAMS Dr DMJ     | BP Chemicals, Penarth, UK                                   |
| WILSON Prof R       | Harvard University, Cambridge, Massachusetts, USA           |
| WRIGHT Dr A P       | ICI Wilton, UK                                              |
| YORK J              | ICI Everberg, Belgium                                       |

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

February 1987

URL 02144

REGISTER OF CASES OF ANGIOSARCOMA OF THE LIVER DUE TO EXPOSURE TO VINYL CHLORIDE - REVIEW DATE 1 JANUARY 1987

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

1. The 10 new cases in the Register are the following: France 19, 20, 21; Germany 28, 29, 30, 31, 32; UK 13; USA 39.
2. There are amendments from the previous Register against the following cases: France 15; Germany 23, 26.
3. I would like to thank the following for informing me of new cases - Dr Contassot, Dr Barrat, Dr Landers, Dr Friedel, Dr Williams and Mr John E Ertel.
4. For the case corrections I thank Dr Contassot and Dr Friedel.
5. For other corrections and information thanks to Mr John T Barr, Mr John E Ertel, Mr R T Gottesman, Mr A King and Dr N A Sulaiman.
6. I should be very grateful if all recipients of the Register could continue to keep me fully informed of any new cases or, if they hear of other Companies who have acquired a case of ASL, it would be much appreciated if I could be notified by the appropriate person. It is very helpful if new information is supplied in tabulated form, using the headings in the Register as far as possible. For this purpose I have added a blank form at the back of the Register.
7. I would also be glad of help to keep the mailing list correct, with news of retirements and successors, etc.
8. Research: (a) I am enclosing a letter which explains a research project in which I and Professor Carlo Tamburro hope you will be able to co-operate in the interest of knowledge.  
(b) I shall be very grateful if all individuals involved in research or surveys could keep me informed and if possible send me copies when they become available.

From: Dr Brian Bennett  
Occupational Health Department  
ICI Chemicals & Polymers Group  
Hillhouse Site  
P O Box 4 Thornton-Cleveleys  
Blackpool FY5 4QD England

February 1987

LIVER ANGIOSARCOMA CASES (REVIEW DATE - 1 JANUARY 1987)Index

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| Belgium                                           | 1           | ASL Case Numbers by year of Death<br>(Table 6)                          | 44          |
| Canada                                            | 2-3         |                                                                         |             |
| Czechoslovakia                                    | 4           | ASL Case Numbers by year of first exposure<br>(Table 7)                 | 45          |
| France                                            | 5-9         | Western Europe PVC Producers - Start-up Dates vs ASL Cases<br>(Table 8) | 46          |
| Germany                                           | 10-15       |                                                                         |             |
| Italy                                             | 16          | USA PVC Producers - Start-up Dates vs ASL Cases<br>(Table 9)            | 47+48       |
| Japan                                             | 17          | Canadian PVC Producers - Start-up Dates vs ASL Cases<br>(Table 10)      | 49          |
| Norway                                            | 18          |                                                                         |             |
| Sweden                                            | 19          | East European PVC Producers - Start-up Dates vs ASL Cases<br>(Table 11) | 50          |
| UK                                                | 20-23       | Japanese PVC Producers - Start-up Dates vs ASL Cases<br>(Table 12)      | 51          |
| USA                                               | 24-30       |                                                                         |             |
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| Latency Periods (Table 4A)                        | 35          |                                                                         |             |
| Distribution of Latency Periods<br>(Tables 4B-4H) | 36-42       |                                                                         |             |
| Annual Geographical Incidence<br>(Table 5)        | 43          |                                                                         |             |

| 1                              | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                                                                                                                                                                                                                                                                                                                                                                          | 14                                                       | 15                                                                                                         | 16                                                                                                                                                                                                                                                                                                         |
|--------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                                                                                                                                                                                                                                                                                                                                                              | OCCUPATION                                               | OTHER<br>CAREER<br>HIGHLIGHTS                                                                              | OTHER<br>COMMENTS                                                                                                                                                                                                                                                                                          |
| <u>BELGIUM</u>                 |                     |                  |         |         |                      |                      |                     |                                      |                      |                  |                              |                                                                                                                                                                                                                                                                                                                                                                                             |                                                          |                                                                                                            |                                                                                                                                                                                                                                                                                                            |
| 01                             |                     | 12.01.13         | Solvay  | Jemeppe | 00.07.58             | 00.05.76             | 63                  | 18                                   | 17                   | 29.06.76         | Yes                          | High<br>1958-1968<br>exposed to<br>200 ppm<br>for 8 hrs<br>per day<br>and<br>certainly<br>under<br>500 ppm<br>in 6 to<br>9m <sup>3</sup><br>autoclaves<br>1968-1972<br>exposed to<br>50-200 ppm<br>8 hrs per<br>day in<br>25m <sup>3</sup><br>autoclaves<br>1972-1974<br>exposed to<br>50-200 ppm<br>in auto-<br>clave room<br>1974-1980<br>ppm<br>1975- 50<br>ppm<br>RETIRED<br>1 Feb 1975 | Autocleaner<br>14 yrs<br>Polyworker<br>13 yrs            | Driller in a<br>foundry<br>(2 yrs)<br>Former<br>(15 yrs)<br>Work in glass<br>ind. & chemi-<br>cal industry | Hepatic tests<br>(in Oct 1974<br>(were normal.<br>(Retired<br>(Feb 1975<br>(Hospitalised<br>(May 1976<br>(Complete<br>(Clinical and<br>(career details<br>(are given in a<br>(paper by<br>(Hublet et al<br>(in Arch. Belg.<br>(Med. Soc.,<br>(Hyg. Med.<br>(Trav. Med.<br>(Leg.<br>(1977 pages<br>(601-622 |
| 02                             | SR                  | 29 09 40         | Solvay  | Jemeppe | 20 08 62             | 00.10.79             | 39                  | 17                                   | 9                    | 23 10 83         | Yes                          | 08.62-03.<br>63 01.67<br>-10.71 ><br>200 ppm<br>8h/day<br>04.63-12.<br>66 < 200<br>ppm                                                                                                                                                                                                                                                                                                      | Autocleaner<br>15 yrs 5 mths<br>Operator<br>13 yrs 9mths | Fireman since<br>10.71.                                                                                    | 1st sign July<br>79: Thoracic<br>pain 07.79.<br>Hepatic tests<br>altered 10.79.<br>Positive<br>echography<br>11.79. Hepa-<br>tectomy 02.80.<br>Chemotherapy.<br>Information<br>given in<br>letter 12 Nov<br>1986 from Dr<br>De Sloover.                                                                    |

## LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4          | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                        | 15                                             | 16                               |
|--------------------------------|---------------------|------------------|------------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|-------------------------------------------|------------------------------------------------|----------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY    | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                | OTHER<br>CAREER<br>HIGHLIGHTS                  | OTHER<br>COMMENTS                |
| CANADA                         |                     |                  | SHAWINIGAN |         |                      |                      |                     |                                      |                      |                  |                              |                                |                                           |                                                |                                  |
| 01                             |                     | 15.12.13         |            |         | 1944                 | 1955                 | 41                  | 11                                   | 11                   | 02.09.55         | Yes                          |                                | Reactor<br>cleaner                        | Operator<br>(polymerisation)                   | Smoker                           |
| 02                             |                     | 06.03.14         |            |         | 1943                 | 1957                 | 43                  | 14                                   | 14                   | 21.12.57         | Yes                          |                                | Maintenance,<br>millwright,<br>pipefitter | Operator                                       | Worked<br>overtime<br>Smoker     |
| 03                             |                     | 26.08.19         |            |         | 1941                 | 1962                 | 42                  | 21                                   | 20                   | 23.03.62         | Yes                          |                                | Operator,<br>foreman                      |                                                | Worked<br>overtime<br>Non-smoker |
| 04                             |                     | 05.04.19         |            |         | 1945                 | 1967                 | 48                  | 22                                   | 22                   | 21.01.68         | Yes                          |                                | Reactor<br>cleaner                        | Operator,<br>foreman,<br>water cooling<br>unit | Worked<br>overtime<br>Smoker     |
| 05                             |                     | 07.05.11         |            |         | 1944                 | 1968                 | 57                  | 24                                   | 05                   | 05.07.68         | Yes                          |                                | Reactor<br>cleaner                        | Water cooling<br>unit                          | Worked<br>overtime<br>Smoker     |
| 06                             |                     | 15.12.19         |            |         | 1947                 | 1971                 | 51                  | 24                                   | 23                   | 10.04.71         | Yes                          |                                | Reactor<br>cleaner                        | Maintenance,<br>millwright                     | Worked<br>overtime<br>Smoker     |
| 07                             |                     | 09.11.19         |            |         | 1946                 | 1972                 | 53                  | 26                                   | 25                   | 24.12.72         | Yes                          |                                | Reactor<br>cleaner                        | Machine shop<br>operator and<br>poly unit      | Worked<br>overtime<br>Smoker     |
| 08                             |                     | 13.05.20         |            |         | 1961                 | 1973                 | 53                  | 12                                   | 05                   | 12.06.73         | Yes                          |                                | Reactor<br>cleaner                        | Maintenance<br>machine shop                    | In plant<br>25 yrs! Smoker       |
| 09                             |                     | 19.07.21         |            |         | 1946                 | 1974                 | 53                  | 28                                   | 26                   | 04.09.74         | Yes                          |                                | Furnace op.<br>pipefitter<br>maintenance  |                                                | Worked<br>overtime<br>Smoker     |

\* Paper by Dr F DEJOURNE 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 &amp; POLYMERS GROUP

WPX/ASL - LANGTUCASES, H

Page 3

CANADA  
Sheet 2

**LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)**

[illegible]

**LIVER Angiosarcoma Cases - (Review Date: 1 Jan 87)**

| 1                                 | 2                   | 3                | 4        | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                   | 15                                                                                                                                                                                                                                                                                             | 16                |
|-----------------------------------|---------------------|------------------|----------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| COUNTRY AND<br>REFERENCE<br>NO    | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY  | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION           | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                                                                                                                                                                                  | OTHER<br>COMMENTS |
| <u>CZECHOSLO-</u><br><u>VAKIA</u> |                     |                  |          |         |                      |                      |                     |                                      |                      |                  |                              |                                |                      |                                                                                                                                                                                                                                                                                                |                   |
| 01                                |                     | 28.06.28         | State Co | Novaky  | 01.07.57             | 24.12.73             | 45                  | 16                                   | 16                   | 24.12.73         | Yes                          |                                | Autoclave<br>Cleaner | IARC letter<br>of 1-4-82<br>(giving details)<br>from Prof<br>A David of<br>Centre Ind<br>Hygiene and<br>Occ diseases.                                                                                                                                                                          |                   |
| 02                                |                     | 06.07.27         | State Co | Novaky  | 01.11.50             | 27.11.64             | 37                  | 14                                   | 15                   | 26.11.64         | Yes                          |                                | Autoclave<br>Cleaner | IARC letter of<br>11-4-82 gave<br>somewhat<br>altered dates<br>for this case.<br>I have<br>accepted the<br>changes since<br>the dates come<br>from Prof<br>A David of the<br>Centre of<br>Industrial<br>Hygiene and<br>Occupational<br>Diseases. My<br>dates come<br>originally<br>from NIOSH. |                   |

FRANCE  
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 87)

| 1                              | 2                   | 3                | 4       | 5               | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                                                       | 15                                                                                                                                                                         | 16                                                                                                                                                                                                                   |
|--------------------------------|---------------------|------------------|---------|-----------------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY         | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                               | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                                                              | OTHER<br>COMMENTS                                                                                                                                                                                                    |
| FRANCE                         |                     |                  |         |                 |                      |                      |                     |                                      |                      |                  |                              |                                |                                                                          |                                                                                                                                                                            |                                                                                                                                                                                                                      |
| 01                             | IM                  | 15.04.24         | RP      | Rouss-<br>illon | 00.01.46             | 18.02.67             | 43                  | 21                                   | 19                   | 19.02.67         | Yes                          | High                           | Autoclave<br>worker and<br>cleaner<br>19 yrs                             |                                                                                                                                                                            | Ref. Ravier et<br>al Arch. Mal.<br>Prof. 1 30 n°<br>13 Nov 75<br>p 171-177                                                                                                                                           |
| 02                             | SIM                 | 103.06.11        | PCUK    | Brignoud        | 06.07.59             | 15.01.75             | 63                  | 16                                   | 12                   | 24.01.75         | Yes<br>(WDSH no<br>comment)  | High                           | 12 yrs on<br>monomer<br>10 yrs on<br>polymer-<br>isation                 | Italian<br>origin                                                                                                                                                          | Ref.<br>G Bonneton et<br>al "Nouvelle<br>Presse<br>Medicale"<br>15 Nov 1977<br>p 735                                                                                                                                 |
| 03                             | NAV                 | 106.01.20        | RP      | St Vena         | 00.00.46             | 15.01.75             | 55                  | 29                                   | 29                   | 29.06.75         | Yes                          | High                           | Polyworker<br>10 yrs as<br>autoclave<br>cleaner<br>Compounding<br>13 yrs | VCM production<br>16 yrs<br>Italian POW<br>Shepherd,<br>Sawyer, Mason                                                                                                      | Ref. Rety et<br>al Arch. Mal.<br>Prof. 1 37 n°<br>16 June 71<br>p 551-555                                                                                                                                            |
| 04                             | MOR                 | 127.01.27        | PCUK    | Brignoud        | 19.10.49             | 16.01.76             | 49                  | 26                                   | 26                   | 04.01.76         | Yes                          | High                           | Monomer<br>production<br>worker<br>18 yrs<br>PVC<br>filtration<br>18 yrs |                                                                                                                                                                            |                                                                                                                                                                                                                      |
| 05                             | B                   | 129.01.38        | PCUK    | Brignoud        | 18.01.65             | 13.05.76             | 38                  | 11                                   | 11                   | 13.05.76         | Yes                          | High                           | Polyworker<br>11 yrs                                                     | 1) Thoracotomy<br>19th Feb 1976<br>costal<br>angiosarcoma<br>10 Septembre<br>1976<br>2) Scintigraphy<br>found ASL<br>3) Haemorrhage<br>from ASL<br>4) Right<br>Hepatectomy | Ref. P Coudere<br>et al "Semaine<br>des hopitaux"<br>10 Septembre<br>1976<br>Previously had<br>bone<br>angiosarcoma"<br>Also<br>Piltchowski et<br>al "La Nouvelle<br>Presse Medicale"<br>17th July 1979<br>Page 2485 |

FRANCE  
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4       | 5        | 6                    | 7                                        | 8                   | 9                                    | 10                   | 11                                      | 12                           | 13                                                        | 14                                                                                        | 15                                                                              | 16                                                                                                                                                                                                                                                                   |
|--------------------------------|---------------------|------------------|---------|----------|----------------------|------------------------------------------|---------------------|--------------------------------------|----------------------|-----------------------------------------|------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY  | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS                     | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH                        | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                            | OCCUPATION                                                                                | OTHER<br>CAREER<br>HIGHLIGHTS                                                   | OTHER<br>COMMENTS                                                                                                                                                                                                                                                    |
| FRANCE<br>06                   | Pa                  | 14.04.34         | PCUK    | Brignoud | 01.03.58             | 12.08.76                                 | 42                  | 18                                   | 13                   | 11.09.76<br>(NIOSH<br>says<br>12.09.76) | Yes                          | Moderate                                                  | ((1958-1960)<br>12 yrs<br>filtration<br>10-11 yrs<br>polyworker<br>and works<br>lab?)     |                                                                                 | This man had<br>IAOL prior to<br>IAS. Ann. de<br>Mal. Prof.<br>July '77<br>p 645 & 6.<br>IAOL was found<br>in 1971 five<br>yrs before<br>IASL                                                                                                                        |
| 07                             | GIR                 | 26.04.27         | RP      | St Auban | 01.07.50             | After death<br>NIOSH<br>says<br>00.07.76 | 49                  | 26                                   | 22                   | 02.07.76                                | Yes<br>(NIOSH no<br>comment) | High                                                      | Plant fore-<br>man in<br>polymer-<br>isation                                              | 1972-6 admin<br>section in<br>St Auban                                          | Died of<br>septicemia<br>Small liver<br>lesion found<br>after autopsy                                                                                                                                                                                                |
| 08                             | 8                   | 01.04.34         | Solvay  | Tavaux   | 23.05.57             | 03.12.75                                 | 42                  | 19                                   | 19                   | 30.01.77                                | Yes                          | Moderate                                                  | 16 yrs packer<br>& autoclave<br>clnr<br>14 yrs<br>autoclave<br>worker                     |                                                                                 | Had been<br>tunnel worker<br>previously                                                                                                                                                                                                                              |
| 09                             | RFX                 | 08.10.14         | RP      | St Fons  | 10.01.48             | 26.04.76                                 | 63                  | 28                                   | 28                   | 25.12.77                                | Yes                          | Very High<br>1948-1966<br>Lesser<br>Exposure<br>1966-1976 | Polymer-<br>isation<br>sulphuric<br>operator,<br>autocleaner,<br>autoclave<br>maintenance | 10 yrs in<br>sulphuric<br>acid factory,<br>storekeeper &<br>general<br>services | Operated 4.76<br>for removal of<br>tumour from<br>liver and<br>died after<br>second<br>surgical<br>operation for<br>bilio<br>bronchial<br>fistula<br>Paper by<br>Dr Rety et al<br>in Archives de<br>Maladen<br>Professionals<br>Vol 40 No 6<br>1979 pages<br>1741-1. |

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LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4                                   | 5        | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                                                                                                                                                                  | 15                                                                                             | 16                                                                                                                                                        |
|--------------------------------|---------------------|------------------|-------------------------------------|----------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY                             | FACTORY  | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                                                                                                                          | OTHER<br>CAREER<br>HIGHLIGHTS                                                                  | OTHER<br>COMMENTS                                                                                                                                         |
| France                         |                     |                  |                                     |          |                      |                      |                     |                                      |                      |                  |                              |                                |                                                                                                                                                                                     |                                                                                                |                                                                                                                                                           |
| 10                             | VP                  | 24.05.19         | RP                                  | St Fons  | 00.11.56             | 10.01.78             | 58                  | 21                                   | 21                   | 10.01.78         | Yes                          | High                           | Autoclave<br>cleaner                                                                                                                                                                | 10 yrs in<br>mechanical<br>engineering<br>industry<br>1946-1956                                | Died of<br>pulmonary<br>embolism 5<br>days after<br>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<br>polymer-<br>isation<br>(general<br>purpose<br>worker<br>1946-1972<br>VCM<br>(synthesis<br>(HCl &<br>Acetylene)<br>Foreman<br>(agent<br>de maltrise)<br>1972<br>retired |                                                                                                |                                                                                                                                                           |
| 12                             |                     | 16.08.14         | PCUR                                | Brignoud | 09.02.49             | 00.05.79             | 65                  | 30                                   | 27                   | 23.06.79         | Yes                          | High                           | Monomer<br>production<br>and polymer-<br>isation<br>operator                                                                                                                        |                                                                                                |                                                                                                                                                           |
| 13                             |                     | 19.01.31         | Solvay                              | Tavaux   | 23.09.63             | 26.06.79             | 40                  | 16                                   | 13                   | 22.08.79         | Yes                          |                                | Autocleaner<br>12 yrs,<br>Auto-<br>operator<br>19 yrs,<br>Copolymers<br>14 yrs                                                                                                      | 12 yrs as cycle<br>mechanic.<br>10 yrs as<br>canneller in<br>sanitary ware<br>manufacture      | Cigarette<br>smoker until<br>1974. Ill all<br>of 1977 due to<br>oesophageal<br>varices.<br>Surgical<br>intervention<br>25.05.79<br>(right<br>hepatectomy) |
| 14                             | HU                  | 05-04-24         | Chloe<br>Chiale<br>(Formerly<br>RP) | St Fons  | 1943                 | 00.07.81             | 57                  | 38                                   | 36                   | 29.07.81         | Yes                          | Very High                      | 1943-1975<br>1943-1975<br>and<br>Intermitt-<br>ently<br>1975-1979<br>Process                                                                                                        | 1943-1975<br>All types of<br>maintenance<br>and<br>work<br>1975-1979<br>in VCM Poly<br>Process |                                                                                                                                                           |

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LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

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

| 1                              | 2                   | 3                | 4       | 5                  | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                   | 15                                         | 16                                                                                                                                                               |
|--------------------------------|---------------------|------------------|---------|--------------------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|--------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY            | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                           | OTHER<br>CAREER<br>HIGHLIGHTS              | OTHER<br>COMMENTS                                                                                                                                                |
| FRANCE                         |                     |                  |         |                    |                      |                      |                     |                                      |                      |                  |                              |                                |                                      |                                            |                                                                                                                                                                  |
| 19                             | MAZ                 | 15.12.32         | Atochem | Brignoud           | 07.04.59             | 26.10.84             | 52                  | 25                                   | 25                   | 06.11.85         | Yes                          | High                           | Autoclave<br>operator and<br>cleaner |                                            | Myocardial<br>infarction<br>1980. Coronary<br>bypass 1981.<br>Letter from<br>Dr Contassot<br>15.4.86                                                             |
| 20                             | BR                  | 02.03.23         | Atochem | Brignoud           | 1951                 | 27.12.85             | 63                  | 34                                   | 22                   | 26.12.85         | Yes                          | High                           | Autoclave<br>operator and<br>cleaner | In other parts<br>of factory<br>since 1946 | Portal<br>fibrosis from<br>26.04.74. The<br>illness was<br>diagnosed as<br>presumably<br>work related<br>on 20.04.74.<br>Letter from<br>Dr Contassot<br>05.04.86 |
| 21                             | Pa                  | 01.10.40         | RP      | SEP<br>(Montlucon) | 1959                 | 03.06.86             | 45                  | 27                                   | 4                    | 28.06.86         | Yes                          | High                           | Autocleaner<br>(4 years)             | Maintenance<br>worker                      | Hepatic test<br>May 84 normal.<br>Hepatic test<br>May 86 showed<br>abnormalities.<br>Letter from<br>Dr Barrat<br>18.07.86.                                       |

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Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                                        | 14                                                      | 15                                    | 16                                                                                                                                                                                                                                                             |
|--------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|-----------------------------------------------------------|---------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                            | OCCUPATION                                              | OTHER<br>CAREER<br>HIGHLIGHTS         | OTHER<br>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<br>(pesticide<br>aerosol cans)<br>with VC       |                                       | Reported under<br>(non polymer-<br>flation<br>(workers in<br>NIOSH list of<br>31.1.77.<br>(This of course<br>is strictly<br>(correct.<br>(However I<br>(wonder<br>(whether this<br>(man had high<br>(exposure to<br>(VCM in his<br>(can filling<br>(operation? |
| 04                             |                     | 00.00.30         | 8       | 8       | 16.04.57             | 26.11.74             | 44                  | 17                                   | 17                   | 25.11.74         | Yes (NIOSH)                  | 200-500 ppm<br>(but high<br>(during 1 yr<br>(autocleaner) | Polyworker &<br>(temporary<br>(autocleaner<br>(for 1 yr | 1958 was<br>(autocleaner<br>(for 1 yr | Clinical<br>(details in<br>(paper by<br>(Gokel et al<br>(Virchow Arch<br>(A Path 1976<br>(372 p 195-203                                                                                                                                                        |

GERMANY  
Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

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

GERMANY  
Sheet 3

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                                 | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                                                                    | 15                            | 16                                                                                                                                          |
|-----------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|---------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO    | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                            | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER<br>COMMENTS                                                                                                                           |
| GERMANY<br>09                     |                     | 00.00.34         | 2       | 2       | 20.02.61             | 16.06.76             | 41                  | 15                                   | 13                   | 24.03.78         | Yes                          | High peaks                     | 12 yrs poly-<br>worker incl<br>17% auto-<br>clave<br>cleaning<br>Control room<br>1 yr |                               | 110/78<br>Confirmed<br>Average<br>exposure first<br>19 yrs 150 ppm,<br>to cc 1000 ppm.<br>Next 3 yrs av.<br>175 ppm. Last<br>1 yr av 35 ppm |
| 10<br>(NIOSH gives<br>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-<br>worker incl<br>17% auto-<br>clave<br>cleaning                         |                               | Average<br>exposure first<br>19 yrs 150 ppm,<br>to cc 1000 ppm.<br>Last yr av<br>175 ppm. CWH<br>letter of<br>121.04.78                     |
| 11<br>(NIOSH gives<br>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-<br>clave<br>cleaner<br>19 yrs<br>filter<br>operator                      |                               |                                                                                                                                             |
| 12                                |                     | 00.00.38         | 4       | 4       | 00.00.61             | 00.10.77             | 39                  | 16                                   | 6                    | 07.10.77         | Yes                          | ?                              | PPVC Manu-<br>facture<br>Autoclave<br>worker for<br>16 yrs                            |                               |                                                                                                                                             |

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

GERMANY  
Sheet 5

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

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

| 1                              | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                                     | 13                             | 14                                                                                                   | 15                            | 16                                                                                                                                                                                                                                                                                    |
|--------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|----------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTO-<br>LOGICAL<br>CONFIRM-<br>ATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                                           | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER COMMENTS                                                                                                                                                                                                                                                                        |
| GERMANY<br>23                  |                     | 100.00.27        | 8       | 8       | 1955                 | 26.03.79             | 52                  | 24                                   | 21                   | 29.09.81         | Yes                                    | High<br>(>300 ppm)             | Chemistry<br>Worker                                                                                  |                               | Primary hepatocellular<br>carcinoma;<br>proliferation of the<br>sinusoidal cells with<br>sinusoidal ectasia.<br>Friedel letter 23.12.86.                                                                                                                                              |
| 24                             |                     | 00.00.28         | 8       | 8       | 1969                 | 11.10.82             | 54                  | 13                                   | 12                   | 28.05.83         | Yes                                    | High<br>(>300 ppm)             | Autoclave<br>Cleaner                                                                                 |                               | Prof Eder (Munich)<br>letter 22.08.83.<br>Friedel letter 19.04.85.                                                                                                                                                                                                                    |
| 25                             |                     | 100.00.23        | 8       | 8       | 1960                 | 28.09.81             | 58                  | 21                                   | 13                   | 14.01.83         | Yes                                    | High                           | Polyclave<br>Worker and<br>Autoclave<br>Cleaner                                                      |                               | Prof Selmaier (Munich)<br>letter 22.08.83.<br>Friedel letter 19.04.85                                                                                                                                                                                                                 |
| 26                             |                     | 100.00.22        | 2       | 2       | 1953                 | 14.06.76             | 54                  | 22                                   | 22                   | 22.11.82         | Yes                                    | High                           | Polyworker                                                                                           |                               | Chronic hepatitis,<br>angiomatosis, sinusoidal<br>ectasia. Friedel letter<br>23.12.86.                                                                                                                                                                                                |
| 27                             |                     | 100.00.28        | 4       | 4       | 1955                 | 18.01.83             | 55                  | 28                                   | 18                   | 02.03.84         | Yes                                    | High                           | Autoclave<br>Cleaner till<br>1972                                                                    |                               | Leibach.<br>Friedel letter<br>19.04.85                                                                                                                                                                                                                                                |
| 28                             |                     | 21.11.23         | 7       | 7       | 01.10.60             | 11.08.85             | 61                  | 25                                   | 25                   | 25.08.85         | Yes                                    | High                           | Process<br>worker 1947-<br>84 (01.10.60)<br>-31.03.84<br>PVC product-<br>ion,<br>agitator<br>(area). |                               | Annual VCM screening<br>24.04.85: no complaint,<br>no abnormality detected.<br>1970 two-thirds<br>gastrectomy for ulcers.<br>1971 Coronary thrombosis<br>1983 Femoral<br>implantation<br>1984 Pulmonary embolism<br>and pleuropneumonia.<br>Landers letters 18.09.85<br>and 04.02.87. |
| 29                             |                     | 100.00.22        | 2       | 2       | 1962                 | 15.02.83             | 61                  | 21                                   | 19                   | 15.02.84         | Yes                                    | High                           | Chemistry<br>worker                                                                                  |                               | Haemangiosarcoma.<br>Friedel letter 23.12.86.                                                                                                                                                                                                                                         |
| 30                             |                     | 100.00.17        | 4       | 4       | 1951                 | 07.01.80             | 62                  | 29                                   | 25                   | 25.05.83         | Yes                                    | High                           | Polyworker<br>Shift leader                                                                           |                               | Haemangiosarcoma.<br>Friedel letter 23.12.86.                                                                                                                                                                                                                                         |
| 31                             |                     | 100.00.21        | 8       | 8       | 1953                 | 30.06.85             | 61                  | 32                                   | 20                   | Alive            |                                        | ?                              | Autoclave<br>cleaner                                                                                 |                               | Haemangiosarcoma.<br>Friedel letter 23.12.86.                                                                                                                                                                                                                                         |
| 32                             |                     | 100.00.30        | 8       | 8       | 1955                 | 00.04.85             | 55                  | 30                                   | 21                   | Alive            |                                        | ?                              | Polyworker<br>Autoclave<br>cleaner                                                                   |                               | Haemangiosarcoma.<br>Friedel letter 23.12.86.                                                                                                                                                                                                                                         |

ITALY

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                                              | 2                   | 3                | 4          | 5                 | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                                           | 14                                                                                                                                                                              | 15                                                                                                          | 16                                                                                                   |
|------------------------------------------------|---------------------|------------------|------------|-------------------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO                 | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY    | FACTORY           | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                               | OCCUPATION                                                                                                                                                                      | OTHER<br>CAREER<br>HIGHLIGHTS                                                                               | OTHER<br>COMMENTS                                                                                    |
| <b>ITALY</b>                                   |                     |                  |            |                   |                      |                      |                     |                                      |                      |                  |                              |                                                              |                                                                                                                                                                                 |                                                                                                             |                                                                                                      |
| 01<br>(On NIOSH<br>supple-<br>mentary<br>list) | LG                  | 15.06.34         | PANSAC     | Mira<br>Venice    | 00.00.65             | 19.04.71             | 36                  | 06                                   | 03                   | 16.04.71         | Yes                          |                                                              | PVC Bag<br>extruder                                                                                                                                                             |                                                                                                             | Primary tumour<br>(may have been<br>pericardium.<br>Not homo-<br>genous with<br>other cases.<br>* ** |
| 02                                             | SE                  | 11.11.29         | Montedison | Porto<br>Marghera | 00.00.57             | 13.12.72             | 43                  | 15                                   | 06                   | 27.12.72         | Yes                          |                                                              | Polyworker                                                                                                                                                                      |                                                                                                             | * **                                                                                                 |
| 03                                             | VG                  | 14.03.20         | Solvay     | Ferrara           | 00.01.53             | 10.07.75             | 55                  | 22                                   | 21                   | 10.07.75         | Yes                          | High                                                         | Autocleaner<br>18 yrs (1953-<br>61) Autoclave<br>operator<br>12 yrs (1961-<br>72)                                                                                               | 1972-5 did<br>a variety of<br>jobs<br>including<br>PVC packing.                                             | **                                                                                                   |
| 04                                             | FB                  | 20.07.37         | ANIC       | Ravenna           | 00.04.59             | 00.01.81             | 43                  | 21                                   | 21                   | 30.03.81         | Yes                          | 12 yrs -<br>Very High<br>5 yrs -<br>Medium<br>4 yrs -<br>Low | 11 yr -<br>Monomer<br>operator<br>20 yrs -<br>Autoclave<br>operator &<br>other duties<br>in suspens-<br>ion polymer-<br>isation.<br>Area Foreman<br>in same Dept<br>since 1975. | Never cleaned<br>autoclaves.<br>See paper by<br>CHIAPIANO et<br>al Med Lavoro<br>Vol 6 (1982)<br>pp 555-563 | **<br>Non-smoker.<br>Consumed<br>little<br>alcohol. No<br>AOL.                                       |
| 05                                             | IG Danesin          | 19.03.37         | PANSAC     | Mira<br>Venice    | 00.00.67             | 07.03.83             | 46                  | 16                                   | 8                    | 06.04.83         | Yes                          | Medium-?<br>High                                             | Bag extruder<br>1967-1975<br>Commercial<br>Dept 1976-<br>1983                                                                                                                   |                                                                                                             | 15 Paglia-<br>Lunga telex of<br>12 Aug 1981                                                          |

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

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

## JAPAN

## LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4                                                       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                                                                                                                 | 14                                                                                                        | 15                            | 16                                                                       |
|--------------------------------|---------------------|------------------|---------------------------------------------------------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY                                                 | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                                                                                                     | OCCUPATION                                                                                                | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER<br>COMMENTS                                                        |
| <u>JAPAN</u>                   |                     |                  |                                                         |         |                      |                      |                     |                                      |                      |                  |                              |                                                                                                                                    |                                                                                                           |                               |                                                                          |
| 01                             | Tomoji<br>Mori      | 01.08.22         | Mitsui<br>Toatsu<br>(no comment<br>by Jap PVC<br>Assoc) | Nagoya  | 00.04.53             | 24.10.75             | 53                  | 22                                   | 13                   | 24.10.75         | Yes                          | PVC Assoc<br>says not<br>known.<br>* Japan<br>Times<br>indicated<br>on 25.10.75<br>exposures<br>often at<br>3000 ppm up<br>to 1974 | 13 yrs auto-<br>clave<br>cleaner<br>1964 -<br>assigned to<br>different<br>work since<br>had ill<br>health |                               | Japan Times<br>25.10.75 &<br>Japanese PVC<br>Assoc letter<br>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-<br>isation work<br>(including<br>autoclave<br>cleaning                                        |                               | Japanese PVC<br>Association<br>letter of<br>31.03.78                     |

\* In his letter of 1st April 1982, Dr Montesano of IARC says Japanese Ministry of Labour give

Date of diagnosis - 21-08-74

Age of diagnosis - 52

Years of exposure - 22

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4              | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                             | 14                                   | 15                            | 16                                                                                                                                                                                                                                                  |
|--------------------------------|---------------------|------------------|----------------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|--------------------------------|--------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY        | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                           | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER<br>COMMENTS                                                                                                                                                                                                                                   |
| NORWAY<br>01                   | AH                  | 23.12.15         | Norsk<br>Hydro | Nerøya  | 00.03.50             | 21.12.71             | 36                  | 22                                   | 21                   | 04.01.72         | Yes                          | High                           | Foreman &<br>Autoclave<br>supervisor |                               | Confirmed by<br>Dr Thils-<br>Evensen of NH.<br>At APME Mtg of<br>19 June 1978<br>Mr P Rangnes<br>stated that AH<br>had been a<br>member of a<br>start-up team.<br>VCN & PVC were<br>made in same<br>building. The<br>VCN was made<br>from acetylene |

SWEDEN

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4        | 5         | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                     | 14                                                                                         | 15                            | 16                                                                                                                                                                                                  |
|--------------------------------|---------------------|------------------|----------|-----------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY  | FACTORY   | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL         | OCCUPATION                                                                                 | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER<br>COMMENTS                                                                                                                                                                                   |
| <b>SWEDEN</b>                  |                     |                  |          |           |                      |                      |                     |                                      |                      |                  |                              |                                        |                                                                                            |                               |                                                                                                                                                                                                     |
| 01                             | NU                  | 23.06.27         | Kemanord | Sundevall | 14.08.51             | 20.10.70             | 43                  | 19                                   | 18                   | 20.10.70         | Yes                          |                                        | Polyworker                                                                                 |                               |                                                                                                                                                                                                     |
| 02                             | BL                  | 27.11.11         | Kemanord | Sundevall | 00.01.45             | 00.08.72             | 61                  | 27                                   | 27                   | 16.08.72         | Yes                          | High                                   | VCM<br>production                                                                          |                               | Mr Sjoelin's<br>letter of<br>28 March 1978<br>confirms BL<br>was a monomer<br>worker who was<br>heavily<br>exposed,<br>probably even<br>more so than<br>a normal<br>reactor<br>cleaner              |
| 03                             | NE                  | 10.06.10         | Kemanord | Sundevall | 00.05.47             | 18.03.76             | 63                  | 29                                   | 21                   | 19.03.76         | Yes                          | High                                   | Polyworker                                                                                 |                               |                                                                                                                                                                                                     |
| 04                             | AL                  | 16.11.14         | Kemanord | Sundevall | 00.00.46             | 12.05.77             | 62                  | 31                                   | 31                   | 12.05.77         | Yes                          | High                                   | 1946-1958<br>polymer-<br>isation<br>worker (12<br>yrs) & 1958-<br>1977 foreman<br>(19 yrs) |                               | In first 12<br>yrs of<br>employment had<br>been heavily<br>exposed. In<br>1974, liver<br>abnormality<br>and necrosis<br>diagnosed.<br>Data confirmed<br>in Dr B Byren<br>letter 18.8.77<br>to CEPIC |
| 05                             |                     | 12.03.19         | Kemanord | Sundevall | 11.05.64             | 22.11.80             | 61                  | 16                                   | 16                   | 22.11.80         | Yes                          | High -<br>6 Years<br>Low -<br>10 Years | 1964-1970<br>centrifuge<br>operator<br>1970-1980<br>drier<br>operator                      |                               | Letter of<br>2nd Nov 1981<br>from<br>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 15-05-72 for Case 02.

UK  
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4       | 5         | 6                    | 7                                                        | 8                   | 9                                    | 10                   | 11                                                          | 12                           | 13                             | 14                                                                                                                                                          | 15                                                                                         | 16                                                  |
|--------------------------------|---------------------|------------------|---------|-----------|----------------------|----------------------------------------------------------|---------------------|--------------------------------------|----------------------|-------------------------------------------------------------|------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY   | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS                                     | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH                                            | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                                                                                                  | OTHER<br>CAREER<br>HIGHLIGHTS                                                              | OTHER<br>COMMENTS                                   |
| UK                             |                     |                  |         |           |                      |                                                          |                     |                                      |                      |                                                             |                              |                                |                                                                                                                                                             |                                                                                            |                                                     |
| 01                             | WJ                  | 20.04.01         | ICI     | Hillhouse | 04.04.44             | 03.12.72<br>(Fox &<br>Collier<br>paper says<br>23.12.72) | 71                  | 28                                   | 22                   | 03.12.72<br>(Fox &<br>Collier<br>paper<br>says<br>23.12.72) | Yes                          | 500 ppm                        | 1944-7 VCM<br>1947-8 Drier<br>1948-61<br>Autoclave<br>operator<br>1961-66<br>Drier                                                                          |                                                                                            | Lee and Harry<br>Lancet<br>29-06/74<br>pages 1316-8 |
| 02                             |                     |                  |         |           |                      |                                                          |                     |                                      |                      |                                                             |                              |                                |                                                                                                                                                             |                                                                                            | Dubious<br>fabrication<br>case                      |
| 03                             | BJW                 | 02.06.37         | BP      | Barry     | 00.02.66             | 00.12.74                                                 | 37                  | 09                                   | 3.5                  | 24.12.74                                                    | Yes                          | High                           | Autoclave<br>cleaner                                                                                                                                        |                                                                                            | Exposure<br>limited to<br>2.66 - 9.69               |
| 04                             | JSR                 | 23.06.20         | ICI     | Hillhouse | 26.04.54             | 00.06.79                                                 | 59                  | 25                                   | 18                   | 12.10.79                                                    | Yes                          | Medium-<br>high                | 54-5<br>Bagging<br>Plant<br>55-6<br>Drier Plant<br>56-58<br>Autoclave<br>worker<br>58-61<br>Chargehand<br>Drier<br>Plant<br>61-72<br>Foreman<br>C 2/3 Plant | Pre-war Fish<br>packer<br>1939-45 army<br>vehicle<br>maintenance<br>1945-54<br>fish packer |                                                     |

UK

Sheet 2

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                             | 14                                                                                                                                                                                                                                                                                                        | 15                                                                                                    | 16                |
|--------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                 | OCCUPATION                                                                                                                                                                                                                                                                                                | OTHER<br>CAREER<br>HIGHLIGHTS                                                                         | OTHER<br>COMMENTS |
| UK<br>05                       | JK                  | 30.03.14         | BP      | Barry   | 08.01.51             | 00.10.79             | 65                  | 28                                   | 21                   | 19.11.79         |                              |                                                | 1951-52<br>1 Polycleaner<br>1952-55<br>1 latex<br>1955-60<br>1 Polyfloor<br>1960-64<br>1 Poly<br>1 Chargehand<br>1964-70<br>1 Charging<br>operator<br>1970-72<br>1 Drier<br>operator                                                                                                                      |                                                                                                       |                   |
| 06                             | CEP                 | 1931             | BP      | Barry   | 1962                 | 09.01.80             | 48/9                | 18                                   | 12                   | 09.01.80         |                              |                                                | 7 yrs<br>1 Poly Floor<br>operator<br>15 yrs<br>1 Greaser on<br>1 Poly Floor                                                                                                                                                                                                                               |                                                                                                       |                   |
| 07                             | RGB                 | 26.04.20         | BP      | Barry   | 1963                 | 00.00.80             | 60                  | 17                                   | 8.2                  | 13.06.80         |                              |                                                | 1 Polycleaner<br>1963-5<br>1 Recovery<br>1965-1971                                                                                                                                                                                                                                                        |                                                                                                       |                   |
| 08                             | WTH                 | 08.05.24         | BP      | Barry   | 19.09.50             | 27.11.81             | 57                  | 31                                   | 24                   | 25.12.81         |                              | 1950-1958<br>1500 ppm<br>1960-1974<br>1200 ppm | 1950-51<br>1 Autoclave<br>operator<br>1951-1957<br>1 Chargeman<br>1 autoclave<br>building<br>1957-1974<br>1 Shift<br>1 supervisor<br>1 autoclave<br>building -<br>1 Never<br>cleaned<br>1 autoclaves<br>1 but<br>1 supervisor's<br>1 job entailed<br>1 entering<br>1 autoclaves<br>1 to inspect<br>1 them | 1938-1948<br>1 Motor Mechanic<br>1948-1950<br>1 Operator on<br>1 Acetylene<br>1 Production<br>1 Plant |                   |

UK

Sheet 3

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4       | 5         | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                           | 13                                                                                                      | 14                                                                                                                     | 15                                                                                                                                                                        | 16                                                                                                                                                                                         |
|--------------------------------|---------------------|------------------|---------|-----------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY   | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                                                                          | OCCUPATION                                                                                                             | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                                                             | OTHER<br>COMMENTS                                                                                                                                                                          |
| UK<br>09                       | EIGP                | 07.03.25         | BP      | Barry     | 15.02.50             | 02.03.83             | 58                  | 33                                   | 28                   | 24.02.83         | Yes                          | Medium                                                                                                  | Polyworker                                                                                                             | 12 years on<br>Acrylonitrile<br>Resin Plant.<br>Also prior to<br>1950, 4 years<br>RAP<br>maintenance.<br>13 years motor<br>car paintshop.<br>12 years in<br>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<br>months (500<br>ppm). Low -<br>18 months<br>(50 ppm).<br>Medium -<br>21 months<br>(200 ppm) | Polycleaner<br>1966-67.<br>Spray-drier<br>bagger 1967-<br>68.<br>Blow-down<br>stripper<br>operator<br>1968-70.         | Heavy goods<br>vehicle driver<br>until final<br>illness.<br>18.06.84 from<br>Dr D M J<br>Williams                                                                         | Information<br>given in<br>letter<br>18.06.84 from<br>Dr D M J<br>Williams                                                                                                                 |
| 11                             | GLP                 | 08.05.28         | BP      | Barry     | 19.12.65             | 02.06.85             | 57                  | 19                                   | 16                   | 02.06.85         | Yes                          | High<br>1965-69<br>Med 69-79<br>Low 79-82                                                               | Polycleaner<br>1965-68.<br>Service<br>operator<br>1968-69.<br>Poly<br>Operator<br>1969-79.<br>Leading Hand<br>1979-82. |                                                                                                                                                                           | Letter of<br>04.06.85<br>Dr Paul Smith<br>and letter of<br>04.06.85<br>Dr D M D Evans<br>Oesophageal<br>haemorrhage<br>due to<br>oesophageal<br>varices due to<br>Angiosarcoma<br>of liver |
| 12                             | JT                  | 24.01.37         | ICI     | Millhouse | 16.09.57             | 03.06.85             | 48                  | 28                                   | 28                   | 06.12.85         | Yes                          | Low 1957-59<br>High 59-74<br>Low 74-85                                                                  | Spare man,<br>bagging<br>floor<br>1957-59.<br>Autoclave<br>Operator<br>1959-85                                         |                                                                                                                                                                           | Letter<br>26.06.85<br>Dr F I Lee                                                                                                                                                           |

| 1                              | 2                   | 3                | 4       | 5       | 6                    | 7                    | 8                   | 9                                       | 10                   | 11               | 12                                     | 13                             | 14                                                                            | 15                                                                                                                                    | 16                                                 |
|--------------------------------|---------------------|------------------|---------|---------|----------------------|----------------------|---------------------|-----------------------------------------|----------------------|------------------|----------------------------------------|--------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE<br>TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTO-<br>LOGICAL<br>CONFIRM-<br>ATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                    | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                         | OTHER COMMENTS                                     |
| UK<br>13                       | WJ                  | 02.03.48         | BP      | Barry   | 1968                 | Jan 86               | 37                  | 18                                      | 3                    | 02.06.86         | Yes                                    | High<br>Low<br>High            | Polycleaner<br>1966-69<br>Central<br>Depot<br>1969-70<br>Polyfloor<br>1970-71 | Moved to<br>Acryloni-<br>trile<br>Plant<br>until left<br>BP 1983.<br>Manager of<br>IC & SS<br>Ltd at<br>Cardiff<br>Airport<br>1983-86 | Remained well, working actively, until<br>Jan 1986 |

USA  
Sheet 1

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

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<br>REFERENCE<br>NO | NAME OR<br>INITIALS     | DATE OF<br>BIRTH | COMPANY  | FACTORY           | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH                        | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                                 | OTHER<br>COMMENTS                                                                          |
| USA                            |                         |                  |          |                   |                      |                      |                     |                                      |                      |                                         |                              |                                |                                           |                                                                                                                                               |                                                                                            |
| 01                             | Earl<br>Parke           | 17.10.23         | BPG      | Louis-<br>ville   | 09.12.48             | 03.03.73             | 49                  | 24                                   | 21                   | 03.03.73                                | Yes                          |                                | Pot Cleaner<br>(Block Jama<br>1974) p 53  | History given<br>in Annals NY<br>ACAD SCIENCES<br>(Vol 329 (1979))<br>of Sc Symp<br>page 190 in<br>1974<br>Paper by<br>B R Cottine of<br>OSHA | Rolling Stone<br>Art<br>NY Acad<br>of Sc Symp<br>1974<br>Also Block<br>Jama 1.7.74<br>p 53 |
| 02                             |                         | 19.08.33         | BPG      | Louis-<br>ville   | 15.11.55             | 00.05.70             | 37                  | 14                                   | 13                   | 27.09.71<br>(NIOSH<br>says<br>28.09.71) | Yes                          |                                | Pot Cleaner<br>(CF Block)                 |                                                                                                                                               | Ref 1<br>Also Block<br>JAMA 1.7.74<br>p 53                                                 |
| 03                             | Edward<br>Dinwiddle     | 25.05.15         | BPG      | Louis-<br>ville   | 28.11.45             | 19.12.73             | 58                  | 28                                   | 28                   | 19.12.73                                | Yes                          |                                | Pot Cleaner<br>(CF Block)                 | Louisville<br>Courier<br>Journal<br>02-09-80                                                                                                  | Ref 1<br>Also Block                                                                        |
| 04                             |                         | 15.01.24         | BPG      | Louis-<br>ville   | 06.07.52             | 19.08.67             | 43                  | 15                                   | 15                   | 07.01.68                                | Yes                          |                                | Pot Cleaner<br>(CF Block)                 |                                                                                                                                               | Ref 1<br>Also Block                                                                        |
| 05                             |                         | 25.01.12         | BPG      | Louis-<br>ville   | 19.06.44             | 09.04.64             | 52                  | 20                                   | 20                   | 09.04.64                                | Yes                          |                                | Pot Cleaner<br>(CF Block)                 |                                                                                                                                               | Ref 1<br>Also Block                                                                        |
| 06                             | Ray<br>Austin<br>Jones? | 23.11.28         | BPG      | Louis-<br>ville   | 17.01.62             | 00.02.74             | 45                  | 12                                   | 12                   | 24.07.75                                | Yes                          |                                | US Air Force<br>Pot Cleaner<br>(CF Block) |                                                                                                                                               | Ref 1 +<br>Louisville<br>Times 23.7.75<br>Retired April<br>1974<br>Also Block              |
| 07                             | Charles<br>T Smart      | 03.05.22         | UCC      | S Charle-<br>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                                                                                      |

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

| 1                              | 2                   | 3                | 4        | 5                 | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                                                      | 13                                                                                     | 14                                | 15                                                                   | 16                                                                                                |
|--------------------------------|---------------------|------------------|----------|-------------------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY  | FACTORY           | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION                            | ESTIMATED<br>EXPOSURE<br>LEVEL                                                         | OCCUPATION                        | OTHER<br>CAREER<br>HIGHLIGHTS                                        | OTHER<br>COMMENTS                                                                                 |
| USA                            |                     |                  |          |                   |                      |                      |                     |                                      |                      |                  |                                                         |                                                                                        |                                   |                                                                      |                                                                                                   |
| 16                             | James<br>Howard     | 04.11.27         | BPG      | Louis-<br>ville   | 08.05.50             | 00.00.69             | 41                  | 19                                   | 04                   | 27.03.69         | Yes                                                     |                                                                                        | 1951-4 VCH<br>polymer-<br>isation | From 1954<br>onwards in<br>Army and other<br>service.<br>146-50 Army | Table 4 in<br>Wagoner<br>Testimony to<br>US Senate<br>Confirmed in<br>M N Johnson<br>ltr 07.08.78 |
| 17                             | Peerenboom          | 06.05.31         | BPG      | Louis-<br>ville   | 23.06.55             | 11.10.74             | 43                  | 19                                   | 19                   | 16.10.80         | Yes<br>on 11.10.74<br>but no<br>post-mortem<br>16.10.80 |                                                                                        |                                   |                                                                      | Dr M N Johnson<br>letter of<br>24.2.81 con-<br>firmed death<br>16 years after<br>diagnosis        |
| 18                             | Charlie<br>Arthur   | 22.04.28         | BPG      | Avon Lake         | 15.09.54             | 00.00.75             | 46                  | 21                                   | 13                   | 02.11.75         | Yes                                                     | 13 yrs<br>autocleaner<br>18 yrs on<br>Estol<br>plasticiser<br>16 Carboset<br>operation | Navy<br>Tyre Store                |                                                                      | Confirmed in<br>M N Johnson<br>ltr 07.08.78<br>Also Rolling<br>Stone mag.<br>15.01.76             |
| 19                             | Virgil<br>Christian | 00.00.15         | UCC      | S Charle-<br>ston | 00.00.43             | 19.06.75             | 60                  | 32                                   | 32                   | 06.04.76         | Yes                                                     | 2000 ppm                                                                               |                                   |                                                                      | Williamsport<br>Sun Gazette<br>21 June 1975<br>Charleston<br>Daily Mail<br>21.7.75                |
| 20                             |                     | 11.08.17         | Goodyear | Wingara           | 00.00.55             | 30.01.76             | 58                  | 21                                   | 18                   | 30.01.76         | Yes                                                     |                                                                                        |                                   |                                                                      | NIOSH letter<br>of 25.10.79                                                                       |
| 21                             | Chester<br>Hinkle   | 02.09.09         | UCC      | S Charle-<br>ston | 00.12.46             | Early 77             | 67                  | 30                                   | 22                   | 02.01.77         | Yes                                                     |                                                                                        |                                   |                                                                      | 28 yrs with<br>UCC at SC<br>Retired<br>News release<br>23.2.77                                    |

| 1                              | 2                    | 3                | 4                               | 5               | 6                    | 7                    | 8                   | 9                                    | 10                   | 11               | 12                                     | 13                             | 14                                                                                                                                    | 15                                                                                                                                        | 16                                                                                                                                                                                                                                                   |
|--------------------------------|----------------------|------------------|---------------------------------|-----------------|----------------------|----------------------|---------------------|--------------------------------------|----------------------|------------------|----------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS  | DATE OF<br>BIRTH | COMPANY                         | FACTORY         | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION           | ESTIMATED<br>EXPOSURE<br>LEVEL | OCCUPATION                                                                                                                            | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                             | OTHER<br>COMMENTS                                                                                                                                                                                                                                    |
| USA                            |                      |                  |                                 |                 |                      |                      |                     |                                      |                      |                  |                                        |                                |                                                                                                                                       |                                                                                                                                           |                                                                                                                                                                                                                                                      |
| 22                             |                      | 02.10.23         | BPG                             | Louisville      | 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 Bella Lane of whom 8 had died by 126.1.76. In his letter of 16.09.81 Dr M N Johnson confirms this is the case described by Dannaher Tamburro & Yan in Feb 1980. Am J Medicine Vol 70 p280 |
| 23                             |                      | 00.00.23         | Great American Chemical Company | Pitchburg Mass. | 08.09.58             | 06.04.73             | 50                  | 15                                   | 14                   | 06.04.73         | Yes                                    |                                |                                                                                                                                       |                                                                                                                                           |                                                                                                                                                                                                                                                      |
| 24                             | Charles Edward Moore | 17.05.17         | UCC                             | S Charleston    | 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 (exposed as unit fitter, gas fitter, helper, then shift utility man) | 1937-39 was off and on labourer (1939-41 way have been exposed as reactor cleaner 1943 became shift fitter 1946 became shift utility man) | J N H Wheeler letter of 18.8.77 to J J Stafford gives details of Rose Kaminski letter of 26/2/79. R Kaminski (5 Nov 1980) suggests that NIOSH will retain on register since this neoplasm may be associated with ASL.                                |
| (25)                           |                      |                  |                                 |                 |                      |                      |                     |                                      |                      |                  |                                        |                                |                                                                                                                                       |                                                                                                                                           | R N Wheeler letter of 120/2/79 and Rose Kaminski letters of 26/2/79 and 15/11/80                                                                                                                                                                     |
|                                |                      |                  |                                 |                 |                      |                      |                     |                                      |                      |                  |                                        |                                |                                                                                                                                       |                                                                                                                                           | Removal from register confirmed in R Kaminski letter of 5 November 1980                                                                                                                                                                              |

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

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<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY              | FACTORY           | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS                             | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE                                  | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION | ESTIMATED<br>EXPOSURE<br>LEVEL                                                                                                                                                                     | OCCUPATION                                                                                                                                                                                        | OTHER<br>CAREER<br>HIGHLIGHTS                                                                                                             | OTHER<br>COMMENTS                                                                                                                           |
| USA                            |                     |                  |                      |                   |                      |                                                  |                     |                                      |                                                       |                  |                              |                                                                                                                                                                                                    |                                                                                                                                                                                                   |                                                                                                                                           |                                                                                                                                             |
| 26                             | John Berry          | 07.07.23         | BPC                  | Louisville        | 03.10.47             | 00.00.77<br>(up to 2<br>years<br>after<br>death) | 52<br>(death)       | 28<br>(death)                        | 18                                                    | 11.02.75         | Yes                          | Exposed in<br>some degree<br>to 22<br>chemicals<br>but main<br>exposure<br>was to VCM,<br>probably<br>high                                                                                         | Various jobs<br>in PVC<br>plants from<br>cold room to<br>paste<br>recovery to<br>PVC charging<br>operator to<br>paste<br>charging.<br>111 August<br>1965.<br>Terminated<br>employment<br>Jan 1966 |                                                                                                                                           | IR Kaminski<br>letter of<br>26/2/79 and<br>Prof. Tamburro<br>letter of<br>19/1/79                                                           |
| 27                             | J L<br>Forrest      | 11.05.16         | UCC                  | S Charle-<br>ston | 01.07.41             | 30.11.78                                         | 62                  | 37                                   | 20<br>(NIOSH<br>says 27<br>and C<br>Daily Mail<br>25) | 25.11.78         | Yes                          | High                                                                                                                                                                                               | Operator to<br>10.10.76                                                                                                                                                                           | Exposure in<br>bulk and<br>dispersion PVC<br>manufacture                                                                                  | IR N Wheeler<br>ltr of 4 Jan<br>1979 and<br>Charleston<br>Daily Mail<br>30.11.78 and<br>IR Kaminski<br>26/2/79                              |
| 28                             |                     | 11.04.17         | UCC                  | S Charle-<br>ston | 00.08.44             | 03.11.78                                         | 61                  | 34                                   | 33                                                    | 03.11.78         | Yes                          |                                                                                                                                                                                                    |                                                                                                                                                                                                   |                                                                                                                                           | IR Kaminski<br>letter of<br>6/4/79                                                                                                          |
| 29                             |                     | 12.10.07         | UCC                  | S Charle-<br>ston | 00.05.42             | 00.03.80                                         | 72                  | 38                                   | 16                                                    | 01.03.80         | Yes                          |                                                                                                                                                                                                    |                                                                                                                                                                                                   |                                                                                                                                           | IR Kaminski<br>letters of<br>19th June 1980<br>& 5th Nov 1980                                                                               |
| 30                             | MVR                 | 22.07.22         | Fenneco<br>Chemicals | Flemington        | 11.06.64             | 30.12.80                                         | 58                  | 17                                   | 15                                                    | 30.12.80         | Yes                          | 6 - Unknown<br>9 - Minimal                                                                                                                                                                         | Maintenance<br>Mechanic<br>16 yrs<br>Elsewhere<br>11 yrs<br>Boiler house<br>Operator<br>9 yrs                                                                                                     |                                                                                                                                           |                                                                                                                                             |
| 31                             |                     | 08.11.23         | UCC                  | S Charle-<br>ston | 12.05.46             | 01.08.81                                         | 57                  | 35                                   | 13                                                    | 02.04.82         | Yes                          | High (but<br>not as high<br>as reactor<br>cleaner<br>would<br>(experience))<br>Worked as<br>labourer<br>from<br>June 1941<br>to May 1946<br>and may<br>have<br>cleaned<br>reactors in<br>that time | Chemical<br>Operator in<br>charge<br>reactor<br>From 1959 to<br>1976 Aliphatic<br>Chemicals<br>operator and<br>From July 1976<br>to date<br>Foreman<br>Aliphatic<br>Chemical<br>Operation         | From 1959 to<br>1976 Aliphatic<br>Chemicals<br>operator and<br>From July 1976<br>to date<br>Foreman<br>Aliphatic<br>Chemical<br>Operation | Dr Dacey<br>letter<br>16.10.81 and<br>IR N Wheeler<br>letter of<br>19.11.81.<br>Also Dr Dacey<br>letter of<br>07.01.81 re<br>date of death. |

USA

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

UK system of dates  
DAY - MONTH - YEAR

Sheet 6

| 1                              | 2                   | 3                | 4                                    | 5                   | 6                    | 7                    | 8                   | 9                                    | 10                                  | 11               | 12                                                                                         | 13                                                                                                                                      | 14                                                                                                                                                                                                                                            | 15                                         | 16                                                                                                                                                                |
|--------------------------------|---------------------|------------------|--------------------------------------|---------------------|----------------------|----------------------|---------------------|--------------------------------------|-------------------------------------|------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY                              | FACTORY             | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE                | DATE OF<br>DEATH | HISTOLOGICAL<br>CONFIRMATION                                                               | ESTIMATED<br>EXPOSURE<br>LEVEL                                                                                                          | OCCUPATION                                                                                                                                                                                                                                    | OTHER<br>CAREER<br>HIGHLIGHTS              | OTHER<br>COMMENTS                                                                                                                                                 |
| US 32                          | C W Giroux          | 22-02-08         | Monsanto                             | Springfield<br>Mass | 15-10-51             | 00-07-79             | 71                  | 28                                   | 14<br>(in PVC<br>autoclave<br>area) | 17-05-80         | An autopsy<br>was done and<br>immediate<br>cause of<br>death given<br>as<br>"Angiosarcoma" | The death<br>certificate<br>gave<br>"Mr Giroux"<br>usual<br>occupation<br>as "kettle<br>operator"<br>in and<br>"chemicals<br>industry". | 1940-1951<br>Various jobs<br>in polymer<br>manufacture<br>(BUTVAR<br>LUSTREX<br>Various jobs<br>in and<br>around PVC<br>autoclaves<br>1964-1973<br>Various<br>clerical<br>jobs in PVC<br>polymerisation<br>facility/<br>Retired<br>01-03-73). |                                            | Information<br>given in<br>letter of 24<br>February 1982<br>from Dr<br>Walter C<br>Barnes of<br>Monsanto<br>Springfield to<br>Dr A Munn of<br>Monsanto<br>Europe. |
| US 33                          | S Ferguson<br>Jnr   | 08-10-27         | BFG                                  | Louisville          | 09-09-54             | 11-05-82             | 54                  | 28                                   | 28                                  | Alive            | Yes                                                                                        |                                                                                                                                         | Multiple<br>jobs<br>including<br>Poly<br>Operator +<br>Polycleaner.                                                                                                                                                                           |                                            | Prof Tamburro<br>letter of<br>12 Aug 1982 +<br>Dr M N Johnson<br>letter of<br>28 Feb 1983.                                                                        |
| US 34                          | Mr Byrum            | 29-01-34         | BFG                                  | Louisville          | 1955                 | 03-11-82             | 48                  | 27                                   | 10                                  | 04.08.83         | Yes                                                                                        |                                                                                                                                         | Poly<br>Operator +<br>Autoclave<br>Cleaner<br>1955-65.                                                                                                                                                                                        | 1965 left BFG<br>to become a<br>Clergyman. | Dr M N Johnson<br>letter of<br>3 Nov 1982,<br>28 Feb 1983<br>and 9 Aug<br>1984.                                                                                   |
| US 35                          |                     | 09-03-12         | UCC                                  | S Charles-<br>ton   | 23-07-44             | 18-07-83             | 71                  | 39                                   | 14                                  | 18-07-83         | Yes                                                                                        | High from<br>1944 to<br>1955.<br>Medium from<br>1955-1958                                                                               |                                                                                                                                                                                                                                               |                                            | Dr Dacey<br>letter of<br>15 Sept 1981.                                                                                                                            |
| US 36                          |                     | 27-08-32         | The General<br>Tire and<br>Rubber Co | Ashtab<br>Ula       | 11-06-56             | 21-08-83             | 50                  | 27                                   | 27                                  | Alive            | Yes                                                                                        | Moderate                                                                                                                                | 1956-56<br>labourer<br>1956-57<br>prod helper<br>1957-70<br>operator<br>1970-75<br>electrician<br>1975-present<br>operator                                                                                                                    |                                            | Dr W Landrie<br>letter of<br>12 Sept 1983:<br>spotted at<br>medical<br>May 1981.<br>Testing<br>commenced<br>May 1981                                              |

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

YUGOSLAVIA

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 1987)

| 1                              | 2                   | 3                | 4             | 5       | 6                    | 7                    | 8                   | 9                                       | 10                   | 11               | 12                                     | 13                               | 14                | 15                            | 16                                                                                                                                                                                           |
|--------------------------------|---------------------|------------------|---------------|---------|----------------------|----------------------|---------------------|-----------------------------------------|----------------------|------------------|----------------------------------------|----------------------------------|-------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTRY AND<br>REFERENCE<br>NO | NAME OR<br>INITIALS | DATE OF<br>BIRTH | COMPANY       | FACTORY | FIRST VC<br>EXPOSURE | DATE OF<br>DIAGNOSIS | AGE AT<br>DIAGNOSIS | YEARS OF<br>EXPOSURE<br>TO<br>DIAGNOSIS | YEARS OF<br>EXPOSURE | DATE OF<br>DEATH | HISTO-<br>LOGICAL<br>CONFIRM-<br>ATION | (ESTIMATED)<br>EXPOSURE<br>LEVEL | OCCUPATION        | OTHER<br>CAREER<br>HIGHLIGHTS | OTHER COMMENTS                                                                                                                                                                               |
| YUGOSLAVIA                     |                     |                  |               |         |                      |                      |                     |                                         |                      |                  |                                        |                                  |                   |                               |                                                                                                                                                                                              |
| 01                             |                     | 05.04.14         | Jugo<br>Vinil | Split   | 100.00.53            | 08.04.73             | 59                  | 20                                      | 20                   | 08.04.73         | Yes                                    |                                  |                   |                               | (SARIC et al paper<br>Env Health Perspective Vol 17.<br>pp 189-192 1976                                                                                                                      |
| 02                             |                     | 15.11.31         | Jugo<br>Vinil | Split   | 100.00.50            | 12.07.73             | 42                  | 23                                      | 18                   | 12.07.73         | Yes*                                   |                                  | VCM<br>Production |                               | *In his letter of 3 Oct 1978, Dr Spirtas of<br>NIOSH changed the status of Case 02 to VCM<br>production employee. Dr Spirtas also<br>notified a new Case 03 also a VCM production<br>worker. |
| 04                             |                     | 11.06.30         | Jugo<br>Vinil | Split   | 15.12.58             | 03.09.78             | 48                  | 20                                      | 18                   | 03.09.78         | Yes                                    |                                  |                   |                               | (Rose Kaminski letter of 19 June 1980 and<br>IARC letter of 1 April 1982                                                                                                                     |

Incidence of ASL Cases Per Annum

|            | By date of death | UJRL 02178 |
|------------|------------------|------------|
| 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 .....    | 2                |            |
| 3 .....    | 10               |            |
| 4 .....    | 7                |            |
| 5 .....    | 5                |            |
| 6 .....    | 2                |            |
| Total      | 125              |            |

- 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 The total does not include US 33 and 36, F 15 and G31 and 32 who are alive.

Distribution of ASL Cases by Country

URL 02179

|                |           |
|----------------|-----------|
| USA            | 36 ***    |
| W Germany      | 31 ** *** |
| France         | 21 ***    |
| UK             | 12        |
| Canada         | 10        |
| Sweden         | 5 ****    |
| Yugoslavia     | 4 *****   |
| Italy          | 4 *       |
| Czechoslovakia | 2         |
| Japan          | 2         |
| Belgium        | 2         |
| Norway         | 1         |
| <hr/>          |           |
| Total          | 130       |
| <hr/>          |           |

\* Omit It01 - atypical case of PVC bag extruder.

\*\* Includes G03 aerosol can filler.

\*\*\* Includes case US 24 which was diagnosed as Cholangiosarcoma; &amp; US 33 and 36, F 15 and G 31 and 32, who are alive.

\*\*\*\* Includes one monomer worker.

\*\*\*\*\* Includes two monomer workers.

|     |                |    |
|-----|----------------|----|
| i.e | Western Europe | 76 |
|     | North America  | 46 |
|     | Rest of World  | 8  |

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Total 130

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URL 02180

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

Of the 76 cases in W Europe, 65 have occurred in clusters at 11 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                               | 9                |
| Wacker, Burghausen, Germany                 | 9                |
| Chloe Chimie (Formerly RP), St Fons, France | 8                |
| PCUK, Brignoud, France                      | 7                |
| Kemanord, Sundsvall, Sweden                 | 5                |
| CWH, Marl, Germany                          | 4                |
| ICI, Hillhouse, UK                          | 3                |
| Solvay, Tavaux, France                      | 3                |
| Lonza, Waldshut, Germany                    | 3                |
| Solvay, Jemeppe, Belgium                    | 2                |
|                                             | <u>65</u>        |

NB: There are 32 pre 1962 PVC plants in W Europe; 18 of these have had ASL cases (Ref Table 8)

(b) N America

Of the 46 cases in N America, 38 have occurred at four factories out of a total of 54 factories:- In N America 42 plants have not had ASL cases.

|                         | <u>ASL Cases</u> |
|-------------------------|------------------|
| BFG, Louisville, US     | 14               |
| BFG, Shawinigan, Canada | 10               |
| UCC, S Charleston       | 10               |
| Goodyear, Niagara       | 4                |
|                         | <u>38</u>        |

NB: There are 28 pre 1962 PVC plants in N America; 12 of these have had ASL cases (Ref Tables 9 & 10)

(c) Rest of World

The 8 ASL cases are believed to be in 1 cluster of 4 and 2 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         | 21                 | 545                | 25.95 *        |                       |
|                      | Germany        | 31                 | 632                | 20.38 *        |                       |
|                      | Italy          | 4                  | 74                 | 18.5           |                       |
|                      | Norway         | 1                  | 22                 | 22             |                       |
|                      | Sweden         | 5                  | 122                | 24.5           |                       |
|                      | UK             | <u>12</u>          | <u>272</u>         | 22.66 *        |                       |
|                      |                | <u>76</u>          | <u>1702</u>        | <u>22.39</u>   | W Europe Average      |
| <u>N America</u>     | US             | 36                 | 910                | 25.27 *        |                       |
|                      | Canada         | <u>10</u>          | <u>204</u>         | 20.4 *         |                       |
|                      |                | <u>46</u>          | <u>1114</u>        | <u>24.21</u>   | N America Average     |
| <u>Rest of World</u> | Czechoslovakia | 2                  | 30                 | 15.0           |                       |
|                      | Japan          | 2                  | 39                 | 19.5           |                       |
|                      | Yugoslavia     | <u>4</u>           | <u>85</u>          | 21.2           |                       |
|                      |                | <u>8</u>           | <u>154</u>         | <u>19.2</u>    | Rest of World Average |
| <u>Summary</u>       | W Europe       | 76                 | 1702               | 22.39          |                       |
|                      | N America      | 46                 | 1114               | 24.21          |                       |
|                      | Rest of World  | <u>8</u>           | <u>154</u>         | 19.2           |                       |
|                      |                | <u>130</u>         | <u>2970</u>        | <u>22.84</u>   | World Average         |

France, and USA have an average latency period above world average, Germany, UK and Canada

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

| MAX POSSIBLE<br>LATENCY PERIOD | YEAR OF<br>FIRST EXPOSURE | LATENCY PERIOD<br>(NO OF YEARS)           | ARITHMETIC MEAN<br>OF LATENCY PERIODS |  |
|--------------------------------|---------------------------|-------------------------------------------|---------------------------------------|--|
| 47                             | 1939                      | 38*                                       |                                       |  |
| 46                             | 1940                      |                                           | $\frac{244}{7} = 34.86$               |  |
| 45                             | 1                         | 37,21,37,41                               |                                       |  |
| 44                             | 2                         | 32,38                                     |                                       |  |
| 43                             | 3                         | 38,14,32                                  |                                       |  |
|                                | 4                         | 28,11,24,20,24,34,39                      | $\frac{718}{27} = 26.59$              |  |
|                                | 5                         | 27,22,28,29                               |                                       |  |
|                                | 6                         | 21,29,31,26,28,15,23,<br>30,35            |                                       |  |
| 39                             | 7                         | 29,24,29,28                               |                                       |  |
| 38                             | 8                         | 28,24,34                                  |                                       |  |
|                                | 9                         | 30,26,20                                  | $\frac{521}{21} = 24.80$              |  |
|                                | 1950                      | 26,22,31,19,23,14,33                      |                                       |  |
|                                | 1                         | 19,28,17,28,34,29                         |                                       |  |
| 34                             | 2                         | 21**,15                                   |                                       |  |
| 33                             | 3                         | 25,22,23,22,20,31,22,<br>32***            |                                       |  |
|                                | 4                         | 21,21,25,25,21,28***,<br>22               | $\frac{787}{35} = 22.48$              |  |
|                                | 5                         | 22,23,24,14,19,21,27<br>27*** 24,28,30*** |                                       |  |
|                                | 6                         | 21,12,27***                               |                                       |  |
| 29                             | 7                         | 19,17,15,13,16,28                         |                                       |  |
| 28                             | 8                         | 18,18,15,17,20                            |                                       |  |
|                                | 9                         | 16,21,25,27                               | $\frac{490}{27} = 18.14$              |  |
|                                | 1960                      | 13,18,21,25,24                            |                                       |  |
|                                | 1                         | 15,16,16,16,19,19,12                      |                                       |  |
| 24                             | 2                         | 13,18,17,12,18,21                         |                                       |  |
| 23                             | 3                         | 16,17,20,21                               |                                       |  |
|                                | 4                         | 16,17                                     | $\frac{180}{11} = 16.36$              |  |
|                                | 5                         | 11,19                                     |                                       |  |
|                                | 6                         | 9,18                                      |                                       |  |
| 19                             | 7                         | 16                                        |                                       |  |
| 18                             | 8                         | 18                                        |                                       |  |
|                                | 9                         | 13                                        | $\frac{31}{2} = 15.5$                 |  |
|                                | 1970                      |                                           |                                       |  |
|                                | 1                         |                                           |                                       |  |
| 14                             | 2                         |                                           |                                       |  |
| 13                             | 3                         |                                           |                                       |  |
|                                | 4                         |                                           |                                       |  |
|                                | TOTAL                     | 130 CASES                                 | $\frac{2971}{130} = 22.85$            |  |

\* Cholangiosarcoma  
\*\* Aerosol can filler  
\*\*\* US33 and 36; F15 and G31 and G32 still alive.

TABLE 4D  
LATENCY PERIODS OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE AND GEOGRAPHICAL LOCATION

| MAX POSSIBLE<br>LATENCY PERIOD | YEAR OF<br>FIRST EXPOSURE | LATENCY PERIODS IN  |                   | ROW   |
|--------------------------------|---------------------------|---------------------|-------------------|-------|
|                                |                           | WESTERN EUROPE      | NORTH AMERICA     |       |
| 47                             | 1939                      |                     | 38*               |       |
| 46                             | 1940                      |                     |                   |       |
| 45                             | 1                         | 37,41               | 21,37             |       |
| 44                             | 2                         |                     | 32,38             |       |
| 43                             | 3                         | 38                  | 14,32             |       |
|                                | 4                         | 28                  | 11,24,20,24,34,39 |       |
|                                | 5                         | 27                  | 22,28,29          |       |
|                                | 6                         | 21,29,31,33         | 26,28,15,23,30,35 |       |
| 39                             | 7                         | 29                  | 24,29,28          |       |
| 38                             | 8                         | 28,34               | 24                |       |
|                                | 9                         | 30,26               | 20                |       |
|                                | 1950                      | 26,22,31            | 19                | 23,14 |
|                                | 1                         | 19,28,34,29,        | 17,28             |       |
| 34                             | 2                         | 21**                | 15                |       |
| 33                             | 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               | 27***             |       |
| 29                             | 7                         | 19,17,15,13,28      |                   | 16    |
| 28                             | 8                         | 18,18               | 15                | 17,20 |
|                                | 9                         | 16,21,25,27,        |                   |       |
|                                | 1960                      | 13,18,21,25         | 24                |       |
|                                | 1                         | 15,16,16,16,19,19   | 12                |       |
| 24                             | 2                         | 13,18,17,18,21      | 12                |       |
| 23                             | 3                         | 16,17,21            | 20                |       |
|                                | 4                         | 16                  | 17                |       |
|                                | 5                         | 11,19               |                   |       |
|                                | 6                         | 9,18                |                   |       |
| 19                             | 7                         | 16                  |                   |       |
| 18                             | 8                         | 18                  |                   |       |
|                                | 9                         | 13                  |                   |       |
|                                | VIOLA 1970                |                     |                   |       |
|                                | 1                         |                     |                   |       |
|                                | 2                         |                     |                   |       |
|                                | MALTONI 3                 |                     |                   |       |
|                                | TOTAL CASES               | 76                  | 46                | 8     |

\* Cholangiosarcoma  
\*\* Aerosol can filler  
\*\*\* US33 and 36; F15 and G31 and 32 still alive

(Review date 1 January 1987)

TABLE 4E

| PLANT                  | START<br>UP<br>DATE | LATENCY PERIODS OF ASL CASES<br>IN SPECIFIC PLANTS<br>(10 OR MORE CASES) | NO OF<br>CASES | AVERAGE<br>LATENCY PERIOD |
|------------------------|---------------------|--------------------------------------------------------------------------|----------------|---------------------------|
| LOUISVILLE<br>USA      | 1940?               | 12,14,15,19,19,20,24,27,28,28,28,29,29<br>31                             | 14             | 23.07                     |
| TROISDORF<br>W GERMANY | 1954                | 12,13,16,16,18,19,19,21,23,25,28,29                                      | 12             | 19.91                     |
| SHAWINIGAN<br>CANADA   | 1943<br>(1941?)     | 11,12,14,21,22,23,24,24,26,28                                            | 10             | 20.5                      |
| S CHARLESTON<br>USA    | 1939?               | 24,30,32,32,34,35,37,38,38,39,                                           | 10             | 33.99                     |

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TABLE 4F

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

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

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TABLE 4G

| PLANT                   | START-UP DATE | LATENCY PERIOD OF ASL CASES<br>IN SPECIFIC PLANTS(4-9 CASES) | NO OF<br>CASES | AVERAGE PERIOD |
|-------------------------|---------------|--------------------------------------------------------------|----------------|----------------|
| BARRY<br>UK             | 1948          | 9,17,18,28,31,33,18,19,18                                    | 9              | 21.22 years    |
| BURGHAUSEN<br>W GERMANY | 1933          | 17,21,22,25,24,13,21,32,30                                   | 9              | 22.77          |
| ST FONS<br>FRANCE       | 1939          | 21,28,29,37,38,27,41,34                                      | 8              | 31.88          |
| BRIGNOUD<br>FRANCE      | 1950          | 11,16,18,26,30,25,34                                         | 7              | 22.85          |
| SUNDSVALL<br>SWEDEN     | 1945          | 16,19,27,29,31                                               | 5              | 24.4           |
| NIAGARA<br>USA          | 1947          | 15,17,21,23                                                  | 4              | 19             |
| SPLIT<br>YUGOSLAVIA     | 1950          | 20,20,22,23                                                  | 4              | 21.25          |
| MARL<br>W GERMANY       | 1948          | 15,16,22,21                                                  | 4              | 18.5           |

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(Review date 1 January 1987)

TABLE 4H

| LATENCY PERIOD OF ASL CASES TABULATED BY YEAR OF FIRST EXPOSURE AND SPECIFIC PLANT<br>(4-9 CASES) |             |                         |                   |                    |                     |                |                          |                   |
|---------------------------------------------------------------------------------------------------|-------------|-------------------------|-------------------|--------------------|---------------------|----------------|--------------------------|-------------------|
| YEAR OF<br>FIRST EXPOSURE                                                                         | BARRY<br>UK | BURGHAUSEN<br>W GERMANY | ST FONS<br>FRANCE | BRIGNOUD<br>FRANCE | SUNDSVALL<br>SWEDEN | NIAGARA<br>USA | SPLIT<br>YUGO-<br>SLAVIA | MARL<br>W GERMANY |
| 1939                                                                                              |             |                         |                   |                    |                     |                |                          |                   |
| 1940                                                                                              |             |                         |                   |                    |                     |                |                          |                   |
| 1                                                                                                 |             |                         | 37,41             |                    |                     |                |                          |                   |
| 2                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |
| 3                                                                                                 |             |                         | 38                |                    |                     |                |                          |                   |
| 4                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |
| 5                                                                                                 |             |                         |                   |                    | 27*                 |                |                          |                   |
| 6                                                                                                 |             |                         | 29                |                    | 31                  | 15,23          |                          |                   |
| 7                                                                                                 |             |                         |                   |                    | 29                  |                |                          |                   |
| 8                                                                                                 |             |                         | 28,34             |                    |                     |                |                          |                   |
| 9                                                                                                 |             |                         |                   | 26,30              |                     |                |                          |                   |
| 1950                                                                                              | 31,33       |                         |                   |                    |                     |                | 23*                      |                   |
| 1                                                                                                 | 28          |                         |                   | 34                 | 19                  | 17             |                          |                   |
| 2                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |
| 3                                                                                                 |             | 25,32                   |                   |                    |                     |                | 20                       | 22                |
| 4                                                                                                 |             | 21                      |                   |                    |                     |                | 22*                      |                   |
| 5                                                                                                 |             | 22,24,30                | 27                |                    |                     | 21             |                          |                   |
| 6                                                                                                 |             |                         | 21                |                    |                     |                |                          |                   |
| 7                                                                                                 |             | 17                      |                   |                    |                     |                |                          |                   |
| 8                                                                                                 |             |                         |                   | 18                 |                     |                | 20                       |                   |
| 9                                                                                                 |             |                         |                   | 16,25              |                     |                |                          |                   |
| 1960                                                                                              |             | 21                      |                   |                    |                     |                |                          |                   |
| 1                                                                                                 |             |                         |                   |                    |                     |                |                          | 15,16             |
| 2                                                                                                 | 18          |                         |                   |                    |                     |                |                          | 21                |
| 3                                                                                                 | 17          |                         |                   |                    |                     |                |                          |                   |
| 4                                                                                                 |             |                         |                   |                    | 16                  |                |                          |                   |
| 5                                                                                                 | 19          |                         |                   | 11                 |                     |                |                          |                   |
| 6                                                                                                 | 9,18        |                         |                   |                    |                     |                |                          |                   |
| 7                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |
| 8                                                                                                 | 18          |                         |                   |                    |                     |                |                          |                   |
| 9                                                                                                 |             | 13                      |                   |                    |                     |                |                          |                   |
| 1970                                                                                              |             |                         |                   |                    |                     |                |                          |                   |
| 1                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |
| 2                                                                                                 |             |                         |                   |                    |                     |                |                          |                   |

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\*Monomer worker

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              | 1             |               | 2            | 101              |            |
| 1983  | 7              | 3             |               | 10           | 111              |            |
| 1984  | 5              | 2             |               | 7            | 118              |            |
| 1985  | 5              |               |               | 5            | 123              |            |
| 1986  | 2              |               |               | 2            | 125              |            |
| TOTAL | 73* **         | 44**          | 8             | 125          |                  |            |

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

\*\* Does not include US33, and 36, F15, G31 and 32. All still alive.  
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(Review date 1 January 1987)

TABLE 6

ASL CASE NUMBERS BY YEAR OF DEATH AND GEOGRAPHICAL LOCATIONS (EXCLUDING IT01)

| KEY<br>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                  |               |
|               | 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      |                       |               |
|               | 6     | F21,UK13                    |                       |               |
|               | Total | 73***                       | 44***                 | 8             |

\* Cholangiosarcoma  
\*\* Aerosol can filler  
\*\*\* Does not include US33 and 36, F15 and G31 and 32. All still alive.

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(Review date 1 January 1987)

TABLE 7

ASL CASE NUMBERS BY YEAR OF FIRST EXPOSURE AND GEOGRAPHICAL LOCATION  
(EXCLUDING IT01)

| KEY<br>EVENTS |       | WESTERN EUROPE         | NORTH AMERICA            | REST OF WORLD |
|---------------|-------|------------------------|--------------------------|---------------|
|               | 1939  |                        | US24*                    |               |
|               | 40    |                        |                          |               |
|               | 1     | Fr11,Fr16              | C3,US27                  |               |
|               | 2     |                        | US13, US29               |               |
|               | 3     | Fr14                   | C2,US19                  |               |
|               | 4     | UK1                    | C1,C5,US5,US7,US28,US35  |               |
|               | 5     | Sw2                    | C4,US3,US9               |               |
|               | 6     | Fr1,Fr3,Sw4            | C7,C9,US8,US11,US21,US31 |               |
|               | 7     | Sw3                    | C6,US22,US26             |               |
|               | 8     | Fr9, Fr17              | US1                      |               |
|               | 9     | Fr12,Fr4               | US12                     |               |
|               | 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                | US36***                  |               |
|               | 7     | Fr8,G4,It2,G2,UK12     |                          | Cz1           |
|               | 8     | Fr6,B1                 | US23                     | Jap2,Y4       |
|               | 9     | Fr2,It4,Fr19,Fr21      |                          |               |
|               | 60    | G5,G13,G25,G28         | US39                     |               |
|               | 1     | G9,G10,G12,G17,G20,G22 | C8                       |               |
|               | 2     | G6,UK6,G21,B2,G29      | US6                      |               |
|               | 3     | Fr13, UK7,Fr18         | US38                     |               |
|               | 4     | Sw5                    | US30                     |               |
|               | 5     | Fr5,UK11               |                          |               |
|               | 6     | UK3, UK10              |                          |               |
|               | 7     | It5                    |                          |               |
|               | 8     | UK13                   |                          |               |
|               | 9     | G24                    |                          |               |
| Viola         | 70    |                        |                          |               |
|               | 1     |                        |                          |               |
|               | 2-    |                        |                          |               |
| Maltoni       | 3     |                        |                          |               |
|               | Total | 76                     | 46                       | 8             |

\* Cholangiosarcoma (US24)

\*\* Aerosol can filler (G3)

\*\*\* US33 and 36, Fr15 and G31 and 32 are still alive.

TABLE 8  
WESTERN EUROPE PVC PRODUCERS - START-UP DATES vs ASL CASES (OMITTING GO3 & It.01)

| START-UP<br>YEAR | COUNTRY NAME   | COMPANY NAME              | LOCATION                  | ASL CASE NUMBER                         | YEAR OF<br>1st Exposure                 |
|------------------|----------------|---------------------------|---------------------------|-----------------------------------------|-----------------------------------------|
| 1931             | West Germany   | BASF                      | Ludwigshafen              |                                         |                                         |
| 1933             | West Germany   | Wacker                    | Burghausen                | 04,07,11,15,23,24,<br>25,31,32          | 57,54,55,53,55,69,60,53,<br>55          |
| 1938             | Italy          | Montecatini               | Acna                      |                                         |                                         |
| 1939             | France         | Rhone Poulenc/<br>Atochem | St Fons                   | 03,09,10,11,14<br>15,16,17              | 46,48,56,41,43,<br>55,41,48             |
| 1940             | United Kingdom | ICI                       | Runcorn                   |                                         |                                         |
|                  | United Kingdom | ICI                       | Hillhouse                 | 01,04,12                                | 44,54,57                                |
| 1945             | Sweden         | Kemanord                  | Sundsvall(Stockvik)       | 01,02,03,04,05                          | 51,45,47,46,64                          |
|                  | Switzerland    | Lonza/ICI since<br>1982   | Sins                      |                                         |                                         |
| 1946             | France         | Rhone-Poulenc             | Rousillon                 | 01                                      | 46                                      |
| 1947             | Italy          | Montedison                | Porto Marghera            | 02                                      | 57                                      |
| 1948             | United Kingdom | BP Chem/ICI<br>since 1982 | Barry                     | 03,05,06,07,08,09,<br>10,11,13          | 66,51,62,63,50,50<br>66,65,68           |
|                  | West Germany   | CWH/Huls                  | Marl                      | 09,10,26,29                             | 61,61,53,62                             |
| 1949             | Belgium        | Solvay                    | Jeneppe                   | 01,02                                   | 58,62                                   |
| 1950             | France         | POUK/Atochem              | Brignoud                  | 02,04,05,06,12,19,<br>20                | 59,49,65,58,49,59,51<br>50              |
|                  | France         | Rhone-Poulenc             | St Auban                  | 07                                      | 50                                      |
|                  | Holland        | Shell                     | Pernis                    |                                         |                                         |
|                  | Norway         | Norsk                     | Heroya                    | 01                                      | 50                                      |
| 1951             | Italy          | Montedison                | Brindisi                  |                                         |                                         |
| 1952             | Italy          | Montedison                | Terni                     |                                         |                                         |
| 1953             | Austria        | Halvic                    | Hallein                   |                                         |                                         |
|                  | France         | Solvay                    | Tavaux                    | 08,13,18                                | 57,63,63                                |
|                  | Italy          | Solvay                    | Ferrara                   | 03                                      | 53                                      |
|                  | Spain          | Rio Rodano                | Hernani                   |                                         |                                         |
|                  | United Kingdom | BIP                       | Aycliffe                  |                                         |                                         |
|                  | West Germany   | Hoechst                   | Gendorf                   | 18                                      | 55                                      |
| 1954             | West Germany   | Dynamit                   | Troisdorf                 | 01,02,08,12,16,17,<br>19,20,21,22,27,30 | 56,57,54,61,55,61,<br>54,61,62,61,55,51 |
| 1955             | Spain          | Monsanto Iberia           | Monzon                    |                                         |                                         |
| 1956             | Spain          | Caiqsa<br>Hispavic        | Sabinanigo<br>Torrelavega |                                         |                                         |
| 1958             | West Germany   | Solvay                    | Rheinberg                 |                                         |                                         |
| 1960             | Italy          | S C Ravenna               | Ravenna                   | 04                                      | 59                                      |
|                  | West Germany   | Lonza/ICI since<br>1982   | Waldshut                  | 06,13,28                                | 62,60,60                                |
| 1962             | Portugal       | Cires                     | Oporto                    |                                         |                                         |
| 1965             | France         | Rhone-Poulenc             | Montlucon                 | 21                                      | 59                                      |
|                  | Italy          | Pozzi                     | Ferrandina                |                                         |                                         |
|                  | West Germany   | Wacker                    | Cologne                   |                                         |                                         |
| 1966             | West Germany   | Hoechst                   | Knapsack(Frankfurt)       | 05*                                     | 60                                      |
| 1967             | France         | ATO Chimie                | Balan                     |                                         |                                         |
|                  | Spain          | Rio Rodano                | Miranda de Ebro           |                                         |                                         |
|                  | Greece         | Esso Pappas               | Diavata Salonika          |                                         |                                         |
| 1968             | Belgium        | Badiphil                  | Antwerp                   |                                         |                                         |
| 1969             | United Kingdom | Vinatex                   | Staveley                  |                                         |                                         |
|                  | Italy          | Rudanca                   | Cagliari Sardina          |                                         |                                         |
| 1970             | Italy          | SIR                       | Porto Torres Sar          |                                         |                                         |
|                  | United Kingdom | ICI                       | Runcorn                   |                                         |                                         |
| 1971             | Italy          | S C Ravenna               | Ravenna                   |                                         |                                         |
|                  | Spain          | Hispavic                  | Martorell                 |                                         |                                         |
|                  | Sweden         | Kemanord                  | Sterungsund               |                                         |                                         |
|                  | United Kingdom | BP Chem                   | Baglan Bay                |                                         |                                         |
| 1972             | Finland        | Pekema                    | Svartback                 |                                         |                                         |
|                  | Holland        | DSM                       | Beek Limburg              |                                         |                                         |
| 1976             | France         | Soc Art D'vinyl           | Mazingarbe                |                                         |                                         |
| 1977             | Spain          | Monsanto Iberia           | Tarragona                 |                                         |                                         |

\* Laboratory worker in Research Department  
PANSAC, Mira Verice, case not included (It 05), due not knowing start up date of the Plant.

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TABLE 9

## USA PVC PRODUCERS - START-UP DATES vs ASL CASES

| START-UP<br>YEAR | COMPANY NAME                 | LOCATION                                                   | ASL CASE<br>NUMBER                                | YEAR OF<br>1st EXPOSURE                           |
|------------------|------------------------------|------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| 1939?            | *UCC                         | S Charleston                                               | 07,13,19,21,24,<br>27,28,29,31,35                 | 44,42,43,46,39,<br>41,44,42,46,44                 |
| 1940?            | *BFG                         | Louisville                                                 | 01,02,03,04,05,<br>06,09,16,17,22,<br>26,33,34,37 | 48,55,45,52,44,<br>62,45,50,55,47,<br>47,54,55,53 |
| 1946?            | *UCC                         | Texas City (Partially closed 1977)                         |                                                   |                                                   |
| 1947             | Goodyear                     | Niagara Falls                                              | 08,10,11,20                                       | 46,51,46,55                                       |
| 1948             | Firestone/<br>Occidental     | Pottstown                                                  | 12                                                | 49                                                |
|                  | Uniroyal                     | Painesville<br>(closed 1975)                               |                                                   |                                                   |
| 1950             | Monsanto                     | Springfield<br>(Closed 1975)                               | 32                                                | 51                                                |
| 1952             | Dow                          | Midland (No PVC since c 1975)                              |                                                   |                                                   |
|                  | BFG                          | Avon Lake                                                  | 18                                                | 54                                                |
| 1953             | BFG                          | Deer Park (Formerly Diamond)                               |                                                   |                                                   |
| 1954             | General Tire                 | Ashtabula<br>(Closed 1984)                                 | 36                                                | 56                                                |
| 1956             | Air Products                 | Pensacola                                                  |                                                   |                                                   |
|                  | Atlantic Refining            | Brooklyn (Closed late 1960s)                               |                                                   |                                                   |
|                  | Borden                       | Leominster (Closed 1984)                                   |                                                   |                                                   |
|                  | Conoco                       | Hebronville (Closed 1975)                                  |                                                   |                                                   |
|                  | BFG                          | Niagara                                                    |                                                   |                                                   |
|                  | Great American<br>Plastics   | Fitchburg<br>(Closed 1983)                                 | 23                                                | 58                                                |
|                  | Hooker                       | Hicksville (Closed 1980-81)                                |                                                   |                                                   |
|                  | Pantasote                    | Passaic (Closed 1984)                                      | 39                                                | 60                                                |
| 1957             | Atlantic Tubing              | Cranston (Closed 1967)                                     |                                                   |                                                   |
|                  | Tenneco                      | Flemington NJ<br>(Closed 1985)                             | 30                                                | 59                                                |
| 1958             | Keysor Century               | Saugus, Cal                                                |                                                   |                                                   |
| 1960             | BFG                          | Watson, Cal                                                |                                                   |                                                   |
|                  | Air Products                 | Calvert City<br>(closed March 1982 Re-opened October 1983) | 38                                                | 63                                                |
|                  | Borden                       | Illioopolis                                                |                                                   |                                                   |
| 1962             | Tenneco/Occidental           | Burlington NJ                                              |                                                   |                                                   |
| 1963             | Conoco/Vista                 | Aberdeen, Miss                                             |                                                   |                                                   |
|                  | Stauffer                     | Long Beach, Cal (Closed 1982)                              |                                                   |                                                   |
| 1965             | Conoco **                    | Assonet, Mass (Closed by Olin 1975, see below)             |                                                   |                                                   |
|                  | Ethyl                        | Baton Rouge (Closed 1984)                                  |                                                   |                                                   |
| 1966             | Georgia Gulf                 | Delaware City (Formerly Diamond)                           |                                                   |                                                   |
|                  | Gen Tire/Pantasote           | Mt Pleasant W Va (Closed 1982)                             |                                                   |                                                   |
|                  | BFG                          | Henry, Ill                                                 |                                                   |                                                   |
|                  | Stauffer                     | Delaware City (Sold to Formosa 1983)                       |                                                   |                                                   |
| 1967             | Allied ***                   | Painesville, O<br>(sold to Robintech)                      |                                                   |                                                   |
|                  | Hooker/Occidental            | Burlington NJ                                              |                                                   |                                                   |
| 1968             | Firestone                    | Perryville (Closed 1982)                                   |                                                   |                                                   |
| 1969             | BFG                          | Pedrickton NJ                                              |                                                   |                                                   |
|                  | Goodyear                     | Plaquemine                                                 |                                                   |                                                   |
|                  | Olin **<br>(Formerly Conoco) | Assonet, Mass (Closed 1975) (See above)                    |                                                   |                                                   |
| 1971             | Conoco/Vista                 | Oklahoma City                                              |                                                   |                                                   |

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TABLE 9 (Continued)  
USA PVC PRODUCERS - START-UP DATES vs ASL CASES

| START-UP<br>YEAR | COMPANY NAME                  | LOCATION                                                                          | ASL CASE<br>NUMBER | YEAR OF<br>1st EXPOSURE |
|------------------|-------------------------------|-----------------------------------------------------------------------------------|--------------------|-------------------------|
| 1972             | Nat Starch                    | Meredosia, Ill                                                                    |                    |                         |
| 1973             | Borden                        | Springfield                                                                       |                    |                         |
|                  | Robintech ***                 | Painesville, O<br>(sold to Georgia<br>Pacific who<br>converted to<br>polystyrene) |                    |                         |
| 1974             | Atlantic Tubing/<br>Tallyrand | Cranston RI (Closed 1982)                                                         |                    |                         |
|                  | Shintech                      | Freeport, Tex                                                                     |                    |                         |
| 1975             | Certain-teed                  | Lake Charles                                                                      |                    |                         |
|                  | Georgia Pacific               | Plaquemine, La                                                                    |                    |                         |
|                  | Tenneco/Occidental            | Pasadena, Tex                                                                     |                    |                         |
| 1979             | Firestone/<br>Occidental      | Plaquemine                                                                        |                    |                         |
| 1983             | Formosa                       | Point Comfort, Tex                                                                |                    |                         |

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

\*\* Refers to same plant at Assonet

\*\*\*Refer to same plant at Painesville. Allied plant never operated again for PVC after it was sold to Robintech.

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

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TABLE 10

CANADIAN PVC PRODUCERS - START-UP DATES vs ASL CASES

| START-UP<br>YEAR | COMPANY NAME         | LOCATION               | ASL CASE<br>NUMBER               | YEAR OF<br>1st EXPOSURE           |
|------------------|----------------------|------------------------|----------------------------------|-----------------------------------|
| 1943<br>(1941?)  | Goodrich             | Shawinigan             | 01,02,03,04,05<br>06,07,08,09,10 | 44,43,41,45,44,<br>47,46,61,46,53 |
| 1951             | Monsanto             | La Salle (Closed 1975) |                                  |                                   |
| 1957             | Goodrich             | Welland                |                                  |                                   |
| 1966             | Esso                 | Sarnia                 |                                  |                                   |
| 1979             | Diamond Shamrock Alb | Fort Saskatchewan      |                                  |                                   |

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TABLE 11

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

| START-UP<br>YEAR | COUNTRY NAME   | COMPANY NAME  | LOCATION         | ASL CASE<br>NUMBER | YEAR OF<br>1st Exposure |
|------------------|----------------|---------------|------------------|--------------------|-------------------------|
| Pre 1939         | East Germany   | State Company | Schopau          |                    |                         |
| 1941             | Russia         | State Comps   | Vladimir et al   |                    |                         |
| 1950             | Yugoslavia     | Jugo Vinil    | Split            | 01,02,03,04        | 53,50,54,48             |
| 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   |                    |                         |

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TABLE 12

JAPANESE PVC PRODUCERS - START-UP DATES vs ASL CASES

| START-UP<br>YEAR | COMPANY NAME    | LOCATION    | ASL CASE<br>NUMBER | YEAR OF<br>1st EXPOSURE |
|------------------|-----------------|-------------|--------------------|-------------------------|
| 1950             | Chisso Corp     | Minamata    |                    |                         |
|                  | Kanegafuchi Kag | Osaka       |                    |                         |
|                  | Tekkosha        | Sakata      |                    |                         |
| 1951             | Mitsui Toatsu   | Nagoya      | 01, 02             | 53, 58                  |
| 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             | Tekkosha        | Yokkaichi   |                    |                         |
| 1973             | Asahi Glass     | Hayatsuki   |                    |                         |
| 1974             | Toyo Soda       | Sakata      |                    |                         |
|                  |                 | Yokkaishi   |                    |                         |
| 1975             | Central Kagaku  | Kawasaki    |                    |                         |
|                  | Toyo Soda       | Yokkaichi   |                    |                         |
| 1977             | Unknown         | Kashima     |                    |                         |

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TABLE 13

SOUTH AND CENTRAL AMERICAN PVC PRODUCERS

| START-UP<br>YEAR | COMPANY NAME                                       | LOCATION                                      | ASL CASE<br>NUMBER | YEAR OF<br>1st EXPOSURE |
|------------------|----------------------------------------------------|-----------------------------------------------|--------------------|-------------------------|
| 1953             | Monsanto Mexica                                    | Lecheria (Mexico)                             |                    |                         |
| 1954             | Policyd                                            | Mexico City (Mexico)                          |                    |                         |
| 1955             | Geon Do Brazil                                     | Sao Paulo (Brazil)                            |                    |                         |
| 1956             | Elchlor                                            | Sao Caetano (Brazil)                          |                    |                         |
| 1960             | Electrochlor                                       | Capitan Bermudez (Argentina)                  |                    |                         |
|                  | Viplastic                                          | Mendoz (Argentina)                            |                    |                         |
| 1961             | Indupa                                             | Cinco Saltos (Argentina)                      |                    |                         |
| 1965             | (SOC Paramanga<br>(1967 start up<br>PET Columbiana | Paramonga (Peru)<br>)<br>Cartagena (Colombia) |                    |                         |
| 1966             | Carburo De Col                                     | Medellin (Colombia)                           |                    |                         |
| 1967             | Plasticos Omega                                    | Mexico                                        |                    |                         |
| 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)                       |                    |                         |

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TABLE 14  
AUSTRALASIAN PVC PRODUCERS  
START-UP DATES

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

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TABLE 15  
MIDDLE EASTERN PVC PRODUCERS  
START-UP DATES

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

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WPX/ASL - LANGUAGES, 11

LIVER Angiosarcoma Cases - (Review Date: 1 Jan 19.)

[illegible]