

# **ANNEX 1**

## **AGENCIES PROVIDING HEALTH RELIEF**

### **UNITED NATIONS AGENCIES**

United Nations High Commissioner for Refugees  
Palais des Nations, CH-1211 Geneva 10, Switzerland  
Tel: (0041)22-7398111 Fax: (0041)22-7319546; 7310776 Telex: 27492

The Emergency Operation Unit,  
UNICEF, 866 UN Plaza, New York, NY 1007, USA  
United Nations Disasters Relief Operations (UNDRO)  
Palais des Nations, CH-1211, Geneva 10, Switzerland  
Tel: (0041)22 7346011; 7332010 (Emergency number)  
Fax: (0041)22 7335623 Telex: 414242 DRO CH

United Nations Children's Fund (UNICEF)  
UNICEF (UNIPAC), Arhusgade 129, Freeport, DK 2100 Copenhagen, Denmark  
Tel: (0045)35-273527 Fax: (0045)31 269421 Telex: 19813

World Food Program (WFP)  
Via Cristoforo Colombo, 426, Rome 00145, Italy  
Tel: (0039)6-57971 Fax: (0039)57975652; 5133537 Telex: 626675

Food and Agriculture Organization (FAO)  
P.O.Box 2223, Cairo, Egypt  
Tel: (0020)2-702229; 702789; 3497184 Fax: (0020)2-3495981  
Telex: 21055 FAONE UN CAIRO

### **WORLD HEALTH ORGANIZATION (WHO)**

WHO Headquarters Geneva (WHO/HQ)  
20 Avenue Appia, CH-1211 Geneva 27, Switzerland  
Tel: (0041)22 7912111 Fax: (0041)22 7910746 Telex: 415416

WHO Regional Office for Africa (AFRO)  
P.O. Box 6, Brazzaville, Congo  
Tel: (00242)833860; 833865 Fax: (00242)831879 Telex: 5217 KG; 5364 KG

WHO Regional Office for the Americas/Pan American Sanitary Bureau (AMRO)  
525, 23rd Street N.W., Washington D.C. 20037, USA  
Tel: (001)861-3200 Fax: (001)2235971 Telex: 248338; 440057; 892744

WHO Regional Office for the Eastern Mediterranean (EMRO)  
P.O.Box 1517, Alexandria 21511, Egypt  
Tel: (0020)3-4830090/6/7; 4839240 Fax: (0020)3-4838916  
Telex. 54028 WHO UN; 54684 WHO UN

WHO Regional Office for Europe (EURO)  
8 Scherfigsvej, DK - 2100 Copenhagen O, Denmark  
Tel: (0045)39-171717 Fax: (0045)39-181120 Telex: 15348

WHO Regional Office for South-East Asia (SEARO)  
World Health House, Indraprastha Estate, Mahatma Ghandi Road,  
New Delhi 110002, India  
Tel: (0091)11-3317804 to 3317823 Fax: (0091)11-3318607; 3327972  
Telex: 65095; 65031

WHO Regional Office for the Western Pacific (WPRO)  
P.O.Box 2932, Manila 1099, Philippines  
Tel: (632)5218421 Fax: (632)5211036 Telex: 27652; 63260; 40365

## **NONGOVERNMENTAL ORGANIZATIONS**

League of Red Cross and Red Crescent Societies  
P.O.Box 372, CH-1211 Geneva 19, Switzerland  
Tel: (0041)22-7345580 Fax: (4100)22-7330395 Telex: 414226

International Committee of the Red Cross (ICRC)  
19, Avenue de la Paix, CH-1202 Geneva, Switzerland  
Tel: (0041)22-7346001 Fax: (0041)22-7332057  
Telex 414226

CARE (Cooperative for American Relief Everywhere)  
660 1st Avenue, New York, N.Y. 10016, USA  
Tel: (001)212-6863110 Fax: (001)212 6964005 Telex: rca 238896

CARITAS International  
Bredgade 69, 1260 Copenhagen K, Denmark  
Tel. (0033)127261 Fax: (0033)324711 Telex: 19362

Catholic Relief Services (CRS)  
209 West La Fayette Street, Baltimore, Maryland 21202-3403, USA  
Tel: (001)301-6252220 Fax: (001)301-6851635  
Telex: 9100000951 (CRS UQ)

HALMO (Aid for Medical Laboratories in Developing Countries)  
Wilhelminapark 52, 3581 UTRE HT, The Netherlands

IAMLT (International Association of Laboratory Technologists)  
östermalmogtan 19, S-114 26 Stockholm, Sweden  
Tel: (0046)8-103031 Fax: (0046)8-109061

LAB AID  
P.O.Box 98/M, Jakarta, Pusat, Indonesia

Lutheran World Relief Federation (LWR)  
World Service, P.O.Box 2100, 1211 Geneva 2, Switzerland  
Tel: (0041)22-791-6434 Fax: (0041) 22 791 0528 Telex: 415546 LWS CH

Christian Medical Commission of the World Council of Churches  
P.O.Box 66, CH 1211 Geneva 20, Switzerland  
Tel: (0041)22-7916111 Fax: (0041)22-7910361 Telex: 23423

Medical Mission Institute Würzburg (MMIW)  
Salvatorstrasse 22, 8700 Würzburg, Germany  
Tel: (0049)931-804850 Fax: (0049)931-8048525 Telex: 680177 MIHIV

The International Council of Voluntary Agencies  
17, Avenue de la Paix, CH 1202 Geneva, Switzerland

The American Council of Voluntary Agencies for Foreign Service  
Technical Assistance Information Clearing House (TAICH)  
200 Park Avenue South, New York, New York 10003, USA

## **EUROPEAN AGENCIES IN DISASTER RELIEF**

OXFAM Health Unit  
274 Banbury Road, Oxford OX2 7DZ, United Kingdom  
Tel: (0044)865-311311 Fax: (0044)865-312600 Telex: 83610 OXFAM G

SAVE THE CHILDREN FUND  
17 Grove Lane, London SE5 8RD, United Kingdom  
Tel: (0044)71-7035400 Fax: (0044)71-7032278 Telex: 892809 SCFLON G

Disasters Emergency Committee  
9 Grosvenor Crescent, London SW1X 7EJ, United Kingdom  
Tel: (0044)71-235-5454 Fax: (0044)71-245-6315 Telex: 918657 BRCS G

Tropical Microbiology Unit  
Medical Microbiology Department, Liverpool University, P.O.Box 147,  
Liverpool, United Kingdom  
Tel: (0044)51-7064381 Fax: (0044)51-7065805 Telex: 627095 UNILPL G

Refugee and Disaster Health Group  
International Community Health, Liverpool School of Tropical Medicine, Pembroke Place,  
Liverpool L3 5QA, United Kingdom  
Tel: (0044)51-7089393 Fax: (0044)51-7088733

London School of Hygiene and Tropical Medicine  
Keppel Street, London WC1E 7HT, United Kingdom  
Tel: (0044)71-6368636 Fax: (0044)71-4365389 Telex: 8953474

Royal Tropical Institute  
Department of Tropical Hygiene, Mauritskade 13, 1092 AD Amsterdam, The Netherlands

International Dispensary Association  
P.O. Box 3098, 1003 AB Amsterdam, The Netherlands  
Tel: (0031)2903-3051 Fax: (0031)2903-1854 Telex: 13566

## **MEDECINS SANS FRONTIERES**

### **FRANCE**

Médecins sans Frontières  
8 rue Saint-Sabin, 75011 Paris  
Tel: (0033)1-40212929 Fax: (0033)1-48066868 Telex: (042) 214360

### **BELGIUM**

Médecins sans Frontières  
24/26 rue Deschampheler, 1080 Brussels  
Tel: (0032)2-4250300 Fax: (0032)2-4253460 Telex: (046) 63607

### **HOLLAND**

Artsen zonder Grenzen (MSF Holland)  
Postadres - Postbus 10014, 1001 EA Amsterdam  
Tel: (0031)20-5208700 Fax: (0031)20-205170 Telex: (044) 10773

### **SWITZERLAND**

Médecins sans Frontières  
10, Chemin Malombre, 1206 Geneva  
Tel: (0041)22-471500 Fax: (0041)22-475511 Telex (045) 421927

### **SPAIN**

Médicos sin Fronteras  
Avenida Puerta del Angel, 1, 08002 Barcelona  
Tel: (0034)3-4125252 Fax: (0034)3-3022889 Telex: 97309 MSF E

### **LUXEMBOURG**

Médecins sans Frontières  
110 Avenue Gaston Diderich, L1420 Luxembourg  
Tel: (00352)458812 Fax: (00352) 459239 Telex: (0402) 60811

## **ANNEX 2**

### **REFERENCE LABORATORIES FOR COMMUNICABLE DISEASES**

#### **EPICENTRE**

8 Rue Saint Sabin, 75011 Paris, France

CRED (Centre for Research on Epidemiology of Disasters)

Clos Chapelle-aux-Champs, 30, 1200 Brussels, Belgium

#### **ENVIRONMENTAL MICROBIOLOGY AND SAFETY REFERENCE LABORATORY**

CAMR, Porton Down, Salisbury SP4 0J6, United Kingdom

Tel: (0044)980-610391

#### **PUBLIC HEALTH LABORATORY SERVICE**

61 Colindale Avenue, London NW9 5EQ, United Kingdom

Tel: (0044)81-200-4400

#### **CENTER FOR DISEASE CONTROL**

Atlanta, Georgia 30333, USA

#### **STATENS SERUMINSTITUT**

Centre for Prevention and Control of Infectious Diseases and Congenital Disorders,  
Artillerivej 5, DK-2300 Copenhagen S, Denmark

Tel: (0045)32683268 Fax: (0045)32683868 Telex 31316

### **Reference laboratories for diagnostic testing of viral haemorrhagic fever specimens**

#### **CENTER FOR DISEASE CONTROL**

Special Pathogens Branch, Virology Division, Bureau of Laboratories

Atlanta, Georgia 30333, USA

#### **US ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES**

Medical Division, Fort Detrick, Frederick, MD 21701, USA

#### **CENTER FOR APPLIED MICROBIOLOGY AND RESEARCH**

Special Pathogens Unit, Salisbury, Porton Down, Wiltshire, SP4 0JG, United Kingdom

#### **INSTITUT DE MEDICINE TROPICALE PRINCE LEOPOLD**

Nationalestraat 155, B-2000 Antwerp, Belgium

#### **NATIONAL INSTITUTE FOR VIROLOGY**

Private Bag X4, Sandringham, Johannesburg, South Africa

NATIONAL INSTITUTE OF HEALTH OF JAPAN

Gakuen 4-7-1, Masashimur ayama-shi, Tokyo, Japan 190-12,

INSTITUTO NACIONAL DE ESTUDIOS SOBRE VIROSIS HEMORRAGICAS

Casilla Correo 195, 2700 Pergamino, Argentina

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**NOTE.** Specimens should be forwarded to these laboratories only following consultation. Proper shipping containers must be used. All regulations for shipping hazardous high-risk specimens must be observed.

# **ANNEX 3**

## **MANUFACTURERS OF PORTABLE OR MOBILE LABORATORIES**

**PORTABLE MEDICAL LABORATORIES INC.**

P.O.Box 667, Solana Beach Ca 92075, USA

Tel: (001)619 755-7385 Fax: (001)619 259-6022 Telex: 4945486 PMLAB

**COLES MINIMEDLAB**

Dept. of Microbiology, The University of Texas Health Science Centre,

7703 Floyd Curl Drive, San Antonio, Texas 78284-7758, USA

**MEDICOACH 7 NC**

Hemlock Road, P.O.Box 129, Oneonta, NY 13820-0129, USA

Tel: (001)607 432-1333 Fax: (001)607 432 8190 Telex: (607)432 1333

**M & M CUSTOM COUCHES**

1458 Country Line Road, Department C, Huntington Valley, Pennsylvania, USA

Tel: (001)215-355-7035

**CLINOMOBIL HOSPITALWECK GmbH**

Carl Leverkus Strasse 16, D-4018 Langenfeld, GERMANY

Tel: (0049)2173-770112 Telex 8515605 CLIND

**MODULMED INDUSTRIE S.A.**

Ch. de Fossabot 3, CH 1196 Gland, Switzerland

Tel: (0041)22-644221 Fax: (0041)22-644213 Telex 419648 MODUCH

**ROY RICKMAN**

Riverdale, Beaford, Winkleigh, EX19 8AD, North Devon, United Kingdom

Tel: (0044)8053 267

# ANNEX 4

## COMMERCIALLY AVAILABLE RAPID DIAGNOSTIC KITS AND REAGENTS AND THEIR MANUFACTURERS

The following is a listing of fluorescent antibody, enzyme immunoassay, and passive agglutination diagnostic kits and reagents that are commercially available. The sources for these materials are listed for potential users to contact. This list is not exhaustive, and the source companies listed may carry other rapid diagnostic reagents. Furthermore, a wide variety of monoclonal and polyclonal antibodies are available that can be used for indirect fluorescent antibody tests or to make other rapid diagnostic test reagents.

### A. FLUORESCENT ANTIBODY (FA) KITS

| <i>Antibody detection, anti-</i> | <i>Source</i>    |
|----------------------------------|------------------|
| Adenovirus, enteric              | 39               |
| <i>Borrelia burgdorferi</i>      | 2, 25, 33,34, 56 |
| <i>Brucella</i>                  | 40, 77           |
| <i>Candida</i>                   | 25               |
| <i>Chlamydia trachomatis</i>     | 29               |
| Cytomegalovirus                  | 29, 34, 49       |
| <i>Entamoeba histolytica</i>     | 56               |
| Epstein-Barr virus               | 33, 49, 74       |
| <i>Giardia intestinalis</i>      | 56               |
| Herpes simplex virus             | 29, 34           |
| HIV                              | 8, 29            |
| HLTV                             | 8, 29, 105       |
| <i>Legionella</i> SA             | 27, 56           |
| <i>Leishmania</i>                | 56               |
| Mumps                            | 29, 34, 74       |
| <i>Mycoplasma</i>                | 33, 34           |
| <i>Plasmodium falciparum</i>     | 40               |
| Respiratory syncytial virus      | 49               |
| <i>Rickettsia conorii</i>        | 40               |
| <i>R. prowasekii</i>             | 52               |
| <i>R. rickettsii</i>             | 52               |
| <i>R. typhi</i>                  | 52               |
| Rubella                          | 29, 34, 74       |
| Rubeola                          | 49, 52           |
| <i>Toxoplasma gondii</i>         | 29, 34,49, 77,58 |

|                                        |                                        |
|----------------------------------------|----------------------------------------|
| <i>Treponema pallidum</i>              | 27, 33, 40, 56, 74, 77,<br>58, 91, 103 |
| <i>Trypanosoma cruzi</i>               | 56                                     |
| Varicella-Zoster virus                 | 49, 74                                 |
| <b>Agent (antigen) detected</b>        |                                        |
| Adenovirus                             | 39                                     |
| <i>Chlamydia trachomatis</i>           | 13, 17, 30, 25, 68, 71, 74, 76, 78, 99 |
| <i>Cryptosporidium</i> oocyst          | 21                                     |
| Cytomegalovirus                        | 30, 74, 82                             |
| <i>Escherichia coli</i> 0157:H7        | 18                                     |
| <i>Giardia intestinalis</i>            | 21                                     |
| Herpes simplex virus                   | 4, 17, 30, 56, 68, 74                  |
| <i>Legionella pneumophila</i>          | 25, 33                                 |
| <i>Neisseria gonorrhoeae</i>           | 30                                     |
| Pneumocystis                           | 21                                     |
| <i>Renibacterium salmoninarum</i>      | 18                                     |
| Respiratory syncytial virus            | 74, 81                                 |
| Respiratory viruses (7)                | 68                                     |
| <i>Salmonella</i> common structural Ag | 18, 82                                 |
| <i>Toxoplasma</i>                      | 74, 82                                 |
| <i>Trichomonas</i>                     | 21, 76                                 |

## B. POLYCLONAL ANTIBODY (FA) CONJUGATES

|                                    |                             |
|------------------------------------|-----------------------------|
| <b>Agent (antigen) detected</b>    |                             |
| <i>Actinomyces israeli</i>         | 10                          |
| Adenovirus, enteric                | 39                          |
| Adenovirus hexon                   | 5, 32                       |
| <i>Bordetella parapertussis</i>    | 13                          |
| <i>B. pertussis</i>                | 13                          |
| <i>Chlamydia trachomatis</i>       | 5, 9, 32                    |
| <i>Coxiella burnetii</i>           | 52                          |
| Cytomegalovirus                    | 5, 32                       |
| <i>Escherichia coli</i> 0157:H7    | 18                          |
| <i>Gardnereiglla vaginalis</i>     | 10                          |
| <i>Giardia intestinalis</i>        | 6                           |
| <i>Haemophilus influenzae</i> a, b | 13                          |
| Hepatitis B surface Ag             | 1, 7                        |
| Herpes simplex virus               | 1, 5, 9, 12, 14, 32, 34, 94 |
| HIV                                | 5, 32, 94                   |

|                                              |                                |
|----------------------------------------------|--------------------------------|
| Influenza A and B                            | 1, 5, 9, 14, 39                |
| <i>Legionella pneumophila</i> gp 1           | 10, 27                         |
| Listeria O Ag polyvalent                     | 13, 18                         |
| Mumps                                        | 34, 94                         |
| <i>Mycoplasma</i> 20 strains                 | 3, 22                          |
| <i>Neisseria catarrhalis</i>                 | 10                             |
| <i>N. gonorrhoeae</i>                        | 13, 27                         |
| Parainfluenza type 1, 2, 3, 4                | 1, 5, 14, 32, 94               |
| Rabies                                       | 1, 14, 35, 77,                 |
| Respiratory syncytial virus                  | 1, 5, 9, 13, 14, 36, 39,<br>94 |
|                                              | 49, 63, 64                     |
| <i>Rickettsia conorii</i>                    | 52                             |
| Rotavirus, all Ags                           | 5, 32                          |
| Rubella                                      | 1, 14                          |
| Rubeola                                      | 1, 14                          |
| <i>Salmonella</i>                            | 13, 18                         |
| <i>Streptococcus</i> groups A, B, C, D, F, G | 13, 35, 82                     |
| <i>Toxoplasma gondii</i>                     | 49                             |
| <i>Treponema pallidum</i>                    | 27, 35, 95                     |

### C. MONOCLONAL ANTIBODY FA CONJUGATES

#### *Agent (antigen) detected*

|                                    |                                             |
|------------------------------------|---------------------------------------------|
| Adenovirus                         | 34                                          |
| <i>Chlamydia trachomatis</i>       | 1, 5, 11, 14, 17, 23, 24,<br>25, 32, 34, 99 |
| Cytomegalovirus                    | 1, 9, 12                                    |
| Epstein-Barr virus                 | 32                                          |
| <i>Giardia intestinalis</i> cysts  | 6                                           |
| Herpes simplex types 1 and 2       | 24, 32, 34                                  |
| HIV p25                            | 31                                          |
| Influenza A and B                  | 34                                          |
| <i>Legionella pneumophila</i> gp 1 | 10, 11, 23, 25                              |
| Parainfluenza types 1, 2, 3        | 34                                          |
| <i>Pneumocystis carinii</i>        | 32                                          |
| Respiratory syncytial virus        | 32, 34                                      |
| <i>Trichomonas vaginalis</i>       | 24                                          |
| Varicella-Zoster virus             | 11, 23, 25, 34                              |
| <i>Yersinia enterocolitica</i>     | 23                                          |

## D. ENZYME IMMUNOASSAY DIAGNOSTIC KITS

### 1. Antibody detection and identification

#### *Antibody Detected, Anti-*

|                                    |                                               |
|------------------------------------|-----------------------------------------------|
| Adenovirus                         | 39,86                                         |
| <i>Bordetella pertussis</i>        | 53,86                                         |
| <i>Borrelia burgdorferi</i>        | 12,33,34,39,45,48,49,<br>56,76,81,86          |
| <i>Brucella abortus</i>            | 43,86                                         |
| <i>Chlamydia trachomatis</i>       | 34,53,66,79,81,86                             |
| <i>Clostridium tetani</i>          | 86                                            |
| <i>Corynebacterium diphtheriae</i> | 86                                            |
| Cytomegalovirus                    | 34,43,45,48,49,53,<br>66,82,83,86,92,94,99    |
| <i>Echinococcus</i>                | 57                                            |
| <i>Entamoeba histolytica</i>       | 43,45,55,57                                   |
| Epstein-Barr virus                 | 41,43,48,49,59,82,83,86                       |
| <i>Giardia intestinalis</i>        | 55                                            |
| <i>Helicobacter pylori</i>         | 86                                            |
| Hepatitis A, B, Delta Ag           | 37,98,99,100,102                              |
| Herpes simplex virus 1 and 2       | 43,48,49,79,82,83,86,<br>94,99                |
| HIV                                | 4,8,37,41,57,79,85,89                         |
| HTLV                               | 85,107                                        |
| Influenza virus                    | 86                                            |
| <i>Leishmania</i>                  | 57                                            |
| Mumps virus                        | 34,43,86,94                                   |
| <i>Mycoplasma</i>                  | 86                                            |
| Parainfluenza virus                | 86                                            |
| <i>Plasmodium falciparum</i>       | 57                                            |
| <i>Rickettsia prowasekii</i>       | 52                                            |
| <i>Rickettsia rickettsii</i>       | 52                                            |
| <i>Rickettsia typhi</i>            | 52                                            |
| Rotavirus                          | 86                                            |
| Rubella                            | 34,37,43,45,48,49,53,94,<br>73,81,82,86,94,99 |
| Rubeola                            | 34,43,49,82                                   |
| Syphilis reagin                    | 2                                             |
| <i>Taenia solium</i>               | 57                                            |
| <i>Toxoplasma gondii</i>           | 48,49,55,66,82,83,86,99                       |

|                           |                   |
|---------------------------|-------------------|
| <i>Treponema pallidum</i> | 44,57             |
| Varicella-Zoster          | 34,43,45,82,86,94 |

## 2. Antigen detection

### *Antigen (agent) detected*

|                                          |                                    |
|------------------------------------------|------------------------------------|
| Adenovirus, enteric                      | 39,76                              |
| <i>Chlamydia trachomatis</i>             | 30,37,62,70,71,72,79               |
| <i>Clostridium difficile</i>             | 13,76                              |
| Cytomegalovirus                          | 13                                 |
| Epstein-Barr virus                       | 13,63,71,81                        |
| <i>Giardia intestinalis</i>              | 2,38,4                             |
| Hepatitis B virus                        | 37,57,81,96,98,99,102              |
| Herpes virus                             | 71,79,81                           |
| HIV                                      | 8,51,85                            |
| HTLV-1                                   | 8,81                               |
| <i>Legionella</i>                        | 81                                 |
| <i>Mycoplasma pneumoniae</i>             | 82                                 |
| <i>Neisseria gonorrhoeae</i>             | 37                                 |
| <i>Neisseria meningitis</i>              | 60                                 |
| <i>Plasmodium falciparum</i>             | 57                                 |
| <i>Pneumocystis carinii</i>              | 81                                 |
| Respiratory syncytial virus              | 17,35,37,71                        |
| Rotavirus                                | 1,4,13,17,37,39,40,76,81           |
| Rubella                                  | 13                                 |
| <i>Salmonella</i> (common structural Ag) | 18                                 |
| <i>Streptococcus</i> Group A             | 13,35,42,59,62,64,66,73,<br>79, 84 |
| <i>Streptococcus</i> Group B             | 42,59,84                           |
| <i>Taenia solium</i>                     | 55                                 |
| <i>Trichomonas</i>                       | 21,70                              |

## E. PASSIVE AGGLUTINATION TESTS

| <i>Antibody Detected</i>        | <i>Test type</i> | <i>Test source</i>       |
|---------------------------------|------------------|--------------------------|
| <i>Entamoeba histolytica</i>    | HA               | 58,91                    |
| <i>Aspergillus</i>              | HA               | 90                       |
| <i>Candida albicans</i>         | HA               | 90                       |
| <i>Coccidioides</i> Ab          | LA               | 21,50                    |
| Cytomegalovirus                 | LA               | 33                       |
| <i>Echinococcus granulosus</i>  | HA               | 58,90                    |
| Epstein-Barr heterophile Ab     | HA               | 33,40,54                 |
| Epstein-Barr heterophile Ab     | LA               | 33                       |
| <i>Fasciola hepatica</i>        | HA               | 90                       |
| Hepatitis B e Ab                | HA               | 47,99 d                  |
| Hepatitis B s Ab                | HA               | 37,47,93,96,98,99,100    |
| Herpes simplex Ab               | LA               | 33                       |
| HIV                             | LA               | 76                       |
| <i>Legionella</i>               | La               | 86                       |
| <i>Rickettsia typhi</i>         | LA               | 52                       |
| <i>Rickettsia rickettsii</i>    | LA               | 52                       |
| Rubella Ab                      | HA               | 1,37,40                  |
| Rubella Ab                      | LA               | 33                       |
| <i>Antigen (Agent) Detected</i> |                  |                          |
| <i>Schistosoma</i>              | HA               | 58,90                    |
| Sporothrix                      | LA               | 50                       |
| <i>Toxoplasma gondii</i>        | HA               | 58,88,90,103             |
| <i>Toxoplasma gondii</i>        | LA               | 90,91,95,103             |
| <i>Treponema pallidum</i>       | HA               | 35,44,58,93,96,97,99,103 |
| <i>Trichinella</i>              | LA               | 86                       |
| <i>Campylobacter</i>            | LA               | 21,86                    |
| <i>Candida albicans</i>         | LA               | 13,50,61,86              |
| <i>Clostridium difficile</i>    |                  | 35                       |
| <i>Cryptococcus neoformans</i>  | LA               | 21,33,34,40,50,95        |
| <i>Echinococcus</i>             | HI               | 1,40                     |
| <i>Escherichia coli</i> K-1     | AGG              | 63,58                    |
| <i>H. influenzae</i> b          | COAG             | 60                       |
| <i>Haemophilus influenzae</i>   | LA               | 33,40,                   |
| Hepatitis B e, surface          | HA               | 47,58,93,96,98,99,100    |
| Herpes simplex                  | LA               | 33                       |
| <i>Leishmania donovani</i>      | HA               | 58                       |

|                                               |      |                        |
|-----------------------------------------------|------|------------------------|
| <i>Neisseria gonorrhoeae</i>                  | COAG | 21,60                  |
| <i>Neisseria meningitidis</i>                 | COAG | 60                     |
| <i>Neisseria meningitidis</i>                 | LA   | 33,35,40,63            |
| Rotavirus                                     | LA   | 21,33,40,86,95,101     |
| Rubella                                       | LA   | 33                     |
| Rubella                                       | HI   | 58,94,104,106          |
| <i>Salmonella</i>                             | LA   | 33,94                  |
| <i>Shigella</i>                               | LA   | 33                     |
| <i>Staphylococcus aureus</i>                  | LAc  | 13,50,63,94            |
| <i>Staphylococcus aureus</i>                  | COAG | 40                     |
| <i>Staphylococcus aureus</i>                  | HA   | 90                     |
| <i>Streptococcus</i> Group A                  | LA   | 2,33,35,46,63,86,94,95 |
| <i>Streptococcus</i> Group B                  | LA   | 25,33,40,46,63         |
| <i>Streptococcus</i> Groups:<br>A, B, C, F, G | COAG | 21,60                  |
| <i>Streptococcus</i> Groups:<br>A, B, C, F, G | LA   | 13,46,95,96            |
| <i>Streptococcus pneumoniae</i>               | LA   | 33,35,40,63            |
| <i>Streptococcus pneumoniae</i>               | COAG | 60                     |
| <i>Toxoplasma</i>                             | HI   | 1,40                   |
| <i>Toxoplasma gondii</i>                      | HA   | 63                     |
| <i>Treponema pallidum</i>                     | HA   | 58,88                  |
| <i>Treponema cruzi</i>                        | HA   | 58                     |
| <i>Vibrio cholerae</i>                        | LA   | 69,94                  |
| <i>Yersinia enterocolitica</i>                | AGG  | 25                     |
| <i>Yersinia enterocolitica</i>                | HI   | 58                     |
| <i>Yersinia</i>                               | LA   | 86                     |

## F. DNA PROBE

### Antigen (agent) detected

|                                   |    |
|-----------------------------------|----|
| <i>Blastomyces dermatitidis</i>   | 80 |
| <i>Chlamydia trachomatis</i>      | 80 |
| <i>Coccidioides immitis</i>       | 80 |
| <i>Cryptococcus neoformans</i>    | 80 |
| <i>Histoplasma capsulatum</i>     | 80 |
| <i>M. avium</i>                   | 80 |
| <i>M. gordonae</i>                | 80 |
| <i>M. intracellulare</i>          | 80 |
| <i>Mycobacterium tuberculosis</i> | 80 |
| <i>Neisseria gonorrhoeae</i>      | 80 |

**Key to test type**

AGG: Agglutination  
COAG: Coagglutination  
HI: Haemagglutination inhibition  
HA: Haemagglutination  
LA: Latex agglutination

**No. Name, address, telephone**

1. ACCURATE CHEMICAL & SCIENTIFIC CORPORATION  
300 Shames Drive, Westbury, NY 11590, USA  
Tel: (001)516-333-2221; (001)800-645-6264 Fax: (001)516-997-4948
2. ANTIBODIES INC.  
P.O.Box 1560, Davis, CA 95617, USA  
Tel: (001)916-758-4400; (001)800-824-8540 Fax: (001)916-758-6307
3. AMERICAN TYPE CULTURE COLLECTION  
Sales Department, 12301 Parklawn Drive, Rockville, MD 20852, USA  
Tel: (001)301-881-2600; (001)800-638-6597 Fax: (001)301-231-5826
4. BIO/CAN AMERICA INC.  
P.O.Box 8129, Portland, ME 04104, USA  
Tel: (001)207-767-7305; (001)800-343-7305 Fax: (001)207-767-7305
5. BIODESIGN INC.  
432 Beachwood Avenue, Kennebunkport, ME 04046, USA  
Tel: (001)207-967-4173 Fax: (001)207-967-4014
6. BIOVIR LABORATORIES INC.  
685 Stone Road, No.6, Benicia, CA 94510, USA  
Tel: (001)707-747-5906; (001)800-442-7342
7. CENTRAL LABORATORIE NETHERLANDS RED CROSS  
Blood Transfusion Service, P.O. Box 9190,  
Dept. Immune Reagents, 1006 AD Amsterdam, The Netherlands  
Tel: (0031)3120-5123246 Fax: (0031)3120-5123332
8. CELLULAR PRODUCTS INC.  
688 Main Street, Buffalo, NY 14202, USA  
Tel: (001)716-842-6270 Fax: (001)716-842-1093
9. CHEMICON INTERNATIONAL INC.  
27515 Enterprise Circle West, Temecula, CA 92390, USA  
Tel: (001)714-676-8080; 800-437-7500 Fax: (001)714-676- ^9209

10. CHEMUNEX S.A.  
41 rue du 11 Novembre 1918, F-94700 Maisons Alfort, France  
Tel: (0033)(1)-43969200
11. CYMBUS BIOSCIENCE LTD.  
2 Venture Road, Chilworth Research Centre, Southampton,  
Hampshire SO1 7NP, United Kingdom  
Tel: (0044) 703-766280
12. DAKO CORPORATION  
6392 Via Real, Carpinteria, CA 93013, USA  
Tel: (001)805-566-6655; 800-235-5763 Fax: (001)805-566-6688
13. DIFCO LABORATORIES  
P.O. Box 331058, Detroit, MI 48232-1058  
Tel: (001)313-961-0800 Fax: (001)313-591-3530
- 13.a DENKA SEIKEN Co. Ltd.  
12-1, Nihonbashi, Kabuto-Cho, Chuo-Ku, Tokyo, Japan 103  
Tel: (81) 03-3669 9421 Fax: (81) 03-3664 1005
14. EUROBIO LABS  
20 Boulevard St-Germain, FD-75005, Paris, France  
Tel: (0033)143-252033
15. HEMAGEN DIAGNOSTICS INC.  
34 Bear Hill Road, Waltham, MA 02154, USA  
Tel: (001)617-890-3766; 800-722-2730 Fax: (001)617-890-3748
16. IMMUNON/LIPSHAW CORP.  
7446 Central Avenue, Detroit, MI 48210, USA  
Tel: (001)800-547 Y-7429 Fax: (001)313-834-1534
17. KALLESTAD DIAGNOSTICS  
1000 Lake Hazeltine Drive, Chaska, MN 55318, USA  
Tel: (001)612-448-4848; 800-666-5111 Fax: (001)612-368-1110
18. KIRKEGAARD & PERRY LABS INC.  
2 Cessna Court, Gaithersburg, MD 20879, USA  
Tel: (001)301-948-7755; 800-638-3167 Fax: (001)301-948-0169
19. MEDICA INC.  
2382 Camino Vida Roble, Suite I, Carlsbad, CA 92009, USA  
Tel: (001)619-438-1886 Fax: (001)619-438-3171

20. MEDICAL & BIOLOGICAL LABS LTD.  
5F Sumitomo-Shoji Marunouchi Bldg 5-10 Marunouchi 3-Chome Naka-ku,  
Nagoya 460, Japan  
Tel: (0081)(0)52-9712081
21. MERIDIAN DIAGNOSTICS INC.  
3471 River Hills Drive, Cincinnati, OH 45244, USA  
Tel: (001)513-271-3700; 800-543-1980 Fax: (001)513-271-3762
22. NIH RESEARCH RESOURCES BRANCH  
c/o Biotech Res. Labs NIAID Repository  
1600 East Gude Drive, Rockville, MD 20850, USA  
Tel: (001)301-251-0800
23. PAESEL + LOREI GmbH & Co.  
Borsigallee 6 Postfach 630347 D-6000 Frankfurt/Main 63, Germany  
Tel: (0049)(0)69-422095 to 99 Fax: (0049)(0)69-423084
24. PHARMINGEN  
11555 Sorrento Valley Rd. #E, San Diego, CA 92121, USA  
Tel: (001)619-792-5730 Fax: (001)619-792-5238
25. PROGEN BIOTECHNIK GmbH  
Im Neuenheimer Feld 519, D-6900 Heidelberg, Germany  
Tel: (0049)(0)6221-40350 Fax: (0049)(0)6221-403535
26. QUIDEL  
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Tel: (001)619-552-1100; 800-874-1517 Fax: (001)619-453-4338
27. SCIMEDX  
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28. SERA-LAB LTD.  
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Tel: (0044)(0)342-716366 Fax: (0044)(0)342-717351
29. STELLAR BIO SYSTEMS INC.  
9075 Guilford Road, Columbia, MD 21046, USA  
Tel: (001)301-381-8550; 800-962-6790 Fax: (001)301-381-8984
30. SYVA CO.  
900 Arastradero Road, Palo Alto, CA 94303-0847, USA  
Tel: (001)800-227-9948 Fax: (001)415-962-0461

31. UNIVERSITY OF LOUVAIN  
Experimental Immunology Unit, Clos Chapelle-aux-Champs 30-56  
B-1200 Bruxelles, Belgium  
Tel: (0032)2-7643430 Fax: (0032)2-7643946
32. VIROSTAT  
P.O. Box 8522, Portland, ME 04104, USA  
Tel: (001)207-871-0118 Fax: (001)207-775-0594
33. WAMPOLE LABORATORIES  
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34. WHITTAKER BIOPRODUCTS  
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36. CALTAG LABORATORIES INC.  
384 Oyster Point Blvd. #16, South San Francisco, CA 94080, USA  
Tel: (001)415-873-6106; 800-874-4007 Fax: (001)415-873-2113
37. ABBOTT LABORATORIES  
Diagnostics Division, D-921 AP6C-6, Abbott Park, IL 60064, USA  
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38. ALEXON BIOMEDICAL, INC.  
1500 Hicks Road, Rolling Meadow, IL 60008, USA  
Tel: (001)312-259-9797; (001)800-262-6990
39. API LABORATORY PRODUCTS Ltd.  
8114 B Trans Canada Highway, St. Laurent, Quebec H4S 1M5, CANADA  
Tel: (001)514-336-7321; (001)800-336-7321
40. BIOMERIEUX  
Marcy-l'Etoile, F-69280 Charbonnières-les-Bains, France  
Tel: (0033)78872000; Fax: (0033)78872090
41. BIOTECH RESEARCH LABS INC.  
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42. BINAX  
95 Darling Avenue, South Portland, ME 04106, USA  
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45. DIAMEDIX CORPORATION  
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47. GREEN CROSS CORPORATION  
3-3 Imabashi 1-Chome, Osaka, Japan  
Tel: (0081)06-2274615 Fax: (0081)06-2280788
48. GENERAL BIOMETRICS, INC.  
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1011 East 4800 South, Salt Lake City, UT 84117, USA  
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52. INTEGRATED DIAGNOSTICS, INC.  
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58. BEHRINGWERKE AG  
Diagnostika, P.O.Box 1140, D-3550 Marburg, Germany  
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59. PACIFIC BIOTECH, INC.  
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Tel: (001)619-695-2688; (001)800-225-0730 Fax: (001)619-695-34...
60. PHARMACIA DIAGNOSTICS AB  
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62. UNIPATH  
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Tel: (001) (415)969-5533
63. WELLCOME DIAGNOSTICS  
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NC 27709, USA  
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68. BAXTER HEALTHCARE CORP.  
MicroSoam Division, 1584 Enterprise Blvd., W. Sacramento, CA 95691, USA  
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69. DENKA SEIKEN CO., LTD.  
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71. ORTHO-DIAGNOSTIC SYSTEMS  
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Tel: (001)223-421060
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7101 Riverwood Dr., Columbia, MD 21046, USA  
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75. VIRION (U.S.), INC.  
4, Upperfield Rd., Morristown, NJ 07960, USA  
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76. CAMBRIDGE BIOTECH  
365 Plantation Street, Biotechnology Research Park, Worcester, MA 01605, USA  
Tel: (001)508-797-5777; (001)800-637-8376
77. INSTITUT PASTEUR PRODUCTION  
3 Bd. Raymond Poincaré, 92430 Marnes la Coquette, France  
Tel: (033)1-47956082 Fax: (033)1- 47419133
78. SYMBIOTICS CORPORATION  
11011 Via Frontera, San Diego, CA 92127, USA  
Tel: (001)619-451-3770 Fax: (001)619-451-3826

79. KODAK  
343 State Street, Rochester, NY 14650, USA  
Tel: (001)800-445-6325 Ext.449; (001)716-725-3460  
Fax: (001)716-781-9544
80. GEN-PROBE  
9880 Campus Point Drive, San Diego, CA 92121, USA  
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81. SANOFI DIAGNOSTICS PASTEUR  
1000 Lake Hazeltine Drive, Chaska, MN 55318-1084, USA  
Tel: (001)800-472-8378; (001)206-881-8300 Fax: (001)206-861-5010
82. INESTAR CORPORATION  
1990 Industrial Blvd., P.O.Box 283, Stillwater, MN 55082-0285, USA  
Tel: (001)800-328-1482; (001)612-439-9710 Fax: (001)612-779-7847
83. IMMUNO-DIAGNOSTIC PRODUCTS, INC.  
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85. DUPONT COMPANY  
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86. BIO-MEDICAL PRODUCTS CORP.  
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Tel: (001)201-627-6010 Fax: (001)201-627-7632
87. ENZO BIOCHEM INC.  
325 Hudson Street, New York, NY 10013, USA  
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Corcega 603-605, Sp-08025 Barcelona, Spain
89. CAMBRIDGE VIRUCCELLS  
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90. FUMOUZE  
7 Place des Martyrs, F-92110 Clichy, France  
Tel: (0033)(1)47311182 Fax: (0033)(1)47310410

91. LABORADIAGNOSTIKA GmbH  
Industriestrasse 12, D- 4284 Heiden, Germany  
Tel: (0049)2867 8083 Fax: (0049)2867 990719
92. SANGSTAT MEDICAL CORPORATION  
1505-B Adams Drive, Menlo Park, California 94025, USA  
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93. THE CHEMO-SERO-THERAPEUTIC RESEARCH INSTITUTE  
668 Ookubo, Shimizu-cho, Kumamoto City 860, Japan  
Tel: (0081) 96-344-1211
94. DENKA SEIKEN CO., LTD.  
Taiyou Building, 12-1 Kabuto-cho, Nihonbashi, Chuo-ku, Tokyo 103, Japan  
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95. EIKEN CHEMICAL CO., LTD.  
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Tel: (0081)3-3813-5401
96. FUJIREBIO INC.  
2-71 Nishishinjuku, Shinjuku-ku, (Shinjuk Daiichi Seimei Building), Tokyo 163, Japan  
Tel: (0081)3-3348-0691
97. IATRON LABORATORIES INC.  
1-11-4 Higashikanda, Chiyoda-ku, Tokyo 101, Japan  
Tel: (0081)3-3862-1761
98. INSTITUTE OF IMMUNOLOGY CO., LTD.  
1-1-15 Kouraku, Bunkyo-ku, (Nihon Seimei Suidobashi Building)  
Tokyo 112, Japan  
Tel: (0081)3-3814-4077
99. INTERNATIONAL REAGENTS CORPORATION  
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Tel: (0081)78-231-4151
100. MEGURO INSTITUTE  
7-29 Masumi-cho, Ikeda City 563, Japan  
Tel: (0081)727-51-2927
101. MITUBISHI KASEI CORPORATION  
2-5-2 Marunouchi, Chiyoda-ku, Tokyo 100, Japan  
Tel: (0081)3-3283-6111

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102. MIZUHO MEDY CO., LTD.  
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Tel: (0081)92-482-8710
103. JAPAN LYOPHILIZATION LABORATORY  
2-8-8 Kouji-machi, Chiyoda-ku, Tokyo 102, Japan  
Tel: (0081)3-3265-5740
104. SHIONOGI AND CO. LTD.,  
3-18 Dosho-machi, Chyuou-ku, Osaka 541, Japan  
Tel: (0081)6-202-1221
105. MEDICAL AND BIOLOGICAL LABORATORIES  
3-5-10 Marunouchi, Naka-ku, (Sumitomoshouji-Marunouchi Building)  
Nagoya 460, Japan  
Tel: (0081)52-971-2081
106. WAKO PURE CHEMICAL INDUSTRIES LTD.  
3-1-2 Dosho-machi, Chuo-ku, Osaka 541, Japan  
Tel: (0081)6-203-1501
107. EISAI CO. LTD.  
4-6-10 Koishikawa, Bunkyo-ku, Tokyo 112, Japan  
Tel: (0081)3-3817-5010

# ANNEX 5

## REAGENTS FOR URINANALYSIS

### General

Reagents for so-called 'dry chemistry' tests offer several advantages over reagents in solutions:

- the stability of dry reagent powders is usually far better than that of reagents in solution;
- dry reagents can be used for preparation of tablets or test strips, which are simple means of semi-quantitative and, although with more sophisticated equipment, quantitative analysis.

The production of dry chemistry reagents is described for urinary analysis. Reagents for serum and blood analysis are beyond the scope of this manual.

Simple reagent powders can be prepared even in small quantities with little equipment, such as a mortar and pestle. Reagent powders can be used on glass plates placed upon a sheet of white paper or on plates of white porcelain, the latter permitting the observation of both colour reactions and precipitations. Test papers are easily prepared by impregnation of larger sheets of absorbent material, such as filter paper or chromatographic paper. The preparation of a selected number of dry reagents is described below.

### Tests for glucose

#### 1. Lestradet test

##### *Principle*

Divalent bismuth is reduced to black metallic bismuth by glucose at boiling temperature. The necessary energy for process is produced by the strongly exothermic reaction which occurs when potassium hydroxide is dissolved in the urine.

##### *Preparation*

- 1 g bismuth nitrate
- 100 g dry potassium hydroxide
- 100 g calcined sodium chloride

Grind the chemicals finely in a mortar. The powder is hygroscopic and must be kept from humidity, tightly sealed.

**Use**

Place a pea-sized heap of powder upon a white surface and moisten with one drop of urine. The appearance of a grey or black colour indicates the presence of glucose, the reaction time depending on glucose concentration as follows:

- grey colour appearing within 2-3 seconds: 10 g glucose/L or more;
- grey colour appearing within 10-20 seconds: approximately 2 g glucose/L;
- grey colour appearing within 30-60 seconds: approximately 1g glucose/L;
- grey colour appearing after 60 seconds: less than 1 g glucose/L.

Other reducing agents, such as ascorbic acid (vitamin C), lead to false positive reactions.

**2. Dry variation of the Benedict reaction****Principle**

The reaction is based on the reduction of bivalent blue copper-citrate ions to monovalent red cuprous oxide, by glucose in boiling water. Copper sulfate and citric acid are provided as stable reagent powders.

**Preparation**

- 20 g cupric sulfate pentahydrate
- 300 g citric acid

Grind the chemicals finely in a mortar. The powder is not hygroscopic and may be stored in screw-cap or snap-cap flasks.

**Use**

Place a pea-sized quantity of powder in a test tube and moisten with 3 drops of urine. Add one pellet of dry sodium or potassium hydroxide and shake the mixture to mix it. Continue shaking throughout spontaneous boiling of the mixture, which is caused by the strongly exothermous reaction.

Glucose concentrations of 20 g/L or more cause heavy olive-brown precipitate turning rapidly dark brown. 10 g/L of glucose yield an orange precipitate turning brown after standing; 5 g/L cause a persistent orange precipitate. Slight orange precipitate with blue supernatant indicates approximately 2 g/L. Lower concentrations yield unchanged blue solution.

False positive reactions may be caused by reducing agents, such as ascorbic acid.

**Test for ketone bodies****Principle**

A test powder based upon Legal's classic reaction with sodium nitroprusside is very widely

used. Nitroprusside yields a violet-coloured complex with enolizable keto-groups such as acetoacetic acid and acetone, which are excreted in metabolic acidosis.

### **Preparation**

- 1 g sodium nitroprusside
- 200 g anhydrous sodium carbonate
- 200 g anhydrous ammonium sulfate

Grind the chemicals finely in a mortar. The powder is only very mildly hygroscopic and is stored in screw-cap or snap-cap flasks.

### **Use**

Moisten a pea-sized heap of powder with one drop of fresh urine. In the presence of 50 mg/L of acetoacetic acid or 500 mg/L of acetone a violet colour appears within one minute.

Phenylpyruvic in the urine yields an orange colour, indicating phenylketonuria.

## **Combined test for urinary protein and urobilinogen**

### **Principle**

A piece of filter-paper impregnated with sulfosalicylic acid and p-dimethylaminobenzaldehyde (p-DMAB, Ehrlich reagent) is placed in the urine to be tested. Sulfosalicylic acid denatures the proteins, leading to turbidity or precipitation, while p-DMAB yields a cherry-red colour in the presence of urobilinogen.

### **Preparation**

- 200 g sulfosalicylic acid
- 20 g p-DMAB

Dissolve the chemicals in distilled water and make up to 1 litre. Dip sheets of filter-paper into this solution and air-dry. Cut the dry sheets into segments 1 cm x 2 cm and store in screw-cap or snap-cap flasks.

### **Use**

Place one segment of reagent paper into approximately 1 mL of urine. The reaction may be performed in a micro test-tube or on a glass plate. Place the glass tile first on white paper to observe the colour reaction and then on black paper to observe turbidity.

## **Test for bilirubin**

### **Principle**

Bilirubin is concentrated by adsorption of urine on a tablet of plaster. Bilirubin remains

on the surface of the tablet, where it is detected by oxidation to blue-green biliverdin by acid ferric chloride.

### ***Preparation***

Mix ordinary white plaster with sufficient water to yield a thick paste which is cast into tablets by pouring it into appropriate moulds. Once hardened, the tablets may be openly stored. Prepare Fouchet reagent by dissolving 20 g trichloroacetic acid and 5 g of ferric chloride in 1000 mL water. This solution is extremely stable.

### ***Use***

Place ten drops of well mixed urine one by one upon the tablet. Take care to place each drop only after the preceding drop has been absorbed. Bilirubin concentrates at the surface of the tablet leaving a yellow spot which turns to bluish green after reaction with one drop of Fouchet reagent. This reaction is highly sensitive (detection limit  $\pm 20$  mg/L) and specific.

## **Reagent for nitrite detection**

### ***Principle***

Detection of urinary nitrite indicates urinary tract infections caused by nitrate-reducing bacteria, provided adequate precautions are taken.

### ***Preparation***

The reaction powder is based upon the classical Griess-reaction.

- 6.2 g naphthylamin
- 1.0 g sulfanilic acid
- 25.0 citric acid

Grind the chemicals thoroughly in a mortar. The powder is barely hygroscopic and may be stored in screw-cap or snap-cap vials.

### ***Use***

Moisten a pea-sized heap of powder with one drop of fresh urine. Nitrite in concentrations as low as 1 mg/L yields a carmine-red colour highly specific for the presence of nitrate-reducing bacteria. The test is positive in more than 80 % of urinary tract infections, although a negative test does not rule out significant bacteriuria.

## **Test for haemoglobin and blood in urine or faeces**

Quick detection of haemoglobin or blood in urine or faeces is based on the property of haemoglobin to act as pseudo-peroxidase, which catalyzes the breakdown of hydrogen peroxide. This catalytic reaction can be detected by means of a colour reaction. Previously, benzidine or orthotolidine were used as reagents, but their use is no longer recommended

because of their carcinogenicity. They can be replaced by guaiac resin.

### **Reagents**

- guaiac resin (gum, Aldrich no. 28.598-6)
- ethanol (96 %)
- hydrogen peroxide (30 %)
- diethyl ether
- glacial acetic acid

### **1. Test for haemoglobin or blood in urine**

Dissolve 0.5 g guaiac resin in 30 mL ethanol. Prepare a 3 % hydrogen peroxide solution with distilled water. Place 5 mL urine in a test tube. Add the ethanol-guaiac solution to the urine until the mixture turns turbid. Add the 3 % hydrogen peroxide solution drop by drop. The mixture turns blue in the presence of haemoglobin or blood in the urine.

### **2. Test for haemoglobin or blood in faeces**

Dilute 30 mL of glacial acetic acid with 70 mL of distilled water. Mix a portion of faeces, about the size of a small walnut, with 3 mL of the acetic acid solution, in a test tube using a glass rod. Boil the emulsion over a small flame for 2 minutes or heat the mixture in a boiling water-bath for 10 minutes to destroy true peroxidase activity. Cool the mixture to room temperature. Add 3 mL of ethyl ether and invert the mixture several times to extract haeme compounds which are soluble in ether. Add a few drops of ethanol to allow for quicker separation of the layers. Pipette a few millilitres of ether extract onto 5 mL guaiac solution. The appearance of a blue ring at the interface of the two layers indicate the presence of haemoglobin or blood cells in the faeces.

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1 Hawk, P.B., Oser, B.L. and Summerson, W.H. *Practical Physiological Chemistry*. Philadelphia; Toronto Blakiston, 1947, p.774.

# **ANNEX 6**

## **MANUFACTURERS OF WATER TESTING KITS**

### **DEL AGUA, THE ROBENS INSTITUTE**

University of Surrey, Guilford GU2 5XH, United Kingdom

Tel: (0044)483- 572823 Fax: (0044)483- 503517 Telex: 859331 UNIVSY G Field analysis of faecal coliform bacteria, chlorine, pH, turbidity temperature and conductivity.

### **MILLIPORE CORPORATION**

80 Ashby Road, Bedford, MA 01730, USA

Tel: (001)800-2251380 (East Coast); (001)800-6322708 (West Coast);  
(001)617 2759200 Fax: (001)617-2758200

Bacteriology tests

### **HACH COMPANY**

P.O.Box 389, Loreland, CO 80539, USA

Tel: (001)800-2274224

Bacteriology and chemistry tests

### **ROTHMOORDE ANALYTICAL**

P.O. Box 38553, Suite 355, Houston, Texas 77238, USA

Tel: (001)713-4457744

### **GUDIMANI ENTERPRISES**

403-404 Saraswati House, 27 Nehru Place, New Delhi 110019, INDIA

Tel: (0091)11-6417353; (0091)11-6413959

### **ELE INTERNATIONAL Ltd.**

Eastman Way, Hemel Hempstead, Hertfordshire HP2 7HB, United Kingdom

Tel: (0044)442-2218355; Fax: (0044)442-252474 Telex 825239

### **WELSH WATER MARKETING**

Cambrian Way, Brecon LD3 7HP, United Kingdom

Tel: (0044)874-3181 Fax: (0044)0874-4167 Telex: 497429

### **POTEPAK Ltd.**

55, Long Avenue, London WC2E 9LJ, United Kingdom

Tel: (0044)71-836-1016 Fax: (0044)71-240-1605 Telex: 297922 INTACLG

### **INSTITUTE OF ENVIRONMENTAL HEALTH MONITORING**

Chinese Academy of Preventive Medicine, 9, Nan Wei Road,

Beijing 100050, People's Republic of China

Tel: (0086)33-8761

# ANNEX 7

## COLLECTING WATER SAMPLES FOR MICROBIOLOGICAL EXAMINATION

Although it may seem a simple matter to collect a sample of water, errors can occur and special care is therefore needed; problems can also arise independently of the sampling technique used. Unless valid samples are collected, the careful work that is carried out in the subsequent analysis could be a complete waste of time.

Water can be divided into three basic types for the purposes of sampling:

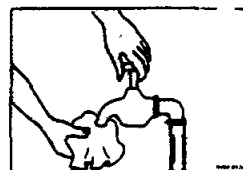
- water from a tap in a distribution system, or from a fixed hand pump, etc.;
- water from a watercourse or reservoir (river, lake, tank);
- water from a dug well, etc., where sampling is more difficult than from an open water source.

### A. Sampling from a tap or pump outlet

The steps to be followed in sampling from a tap or pump outlet are described in sequence below:

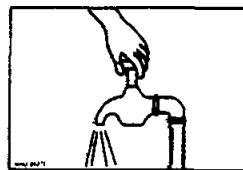
1. Clean the tap

Remove from the tap any attachments that may cause splashing and, using a clean cloth, wipe the outlet in order to remove dirt.



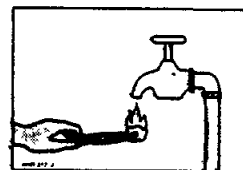
2. Open the tap

Turn on the tap at maximum flow rate and let the water flow for 1 - 2 minutes. Then turn the tap off again.



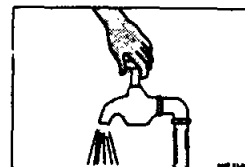
3. Sterilize the tap

Sterilize the tap for a minute with the flame from an ignited cotton-wool swab soaked in alcohol. Alternatively, a gas burner or cigarette lighter may be used.



4. Open the tap prior to sampling

Carefully turn on the tap and allow the water to flow for 1-2 minutes at a medium flow rate.

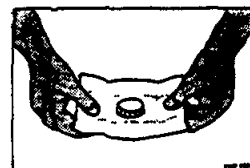


5. Open a sterilized bottle

a) Standard technique: Untie the string the protective brown paper cover and pull out or unscrew the stopper.

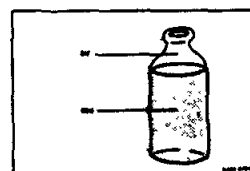


b) Machine-capping technique: Untie the string the protective brown paper cover and remove the cover, while an assistant opens the packet containing the sterile cap.



6. Fill the bottle

Holding the cap and protective cover face downwards so as to prevent entry of dust that might carry microorganisms, place the bottle directly under the water jet, and fill. A small air space should be left to facilitate shaking at the time of inoculation prior to analysis.

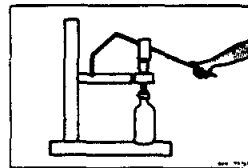
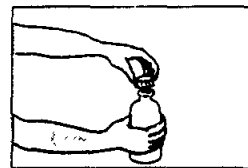


7. Stopper or cap the bottle

a) Standard technique: Place the stopper in the bottle or screw on the cap and fix the brown paper protective cap back in place with the string.



b) Machine-capping technique: Place the cap in position and then secure it using the capping machine; attach the protective brown cover with the string.

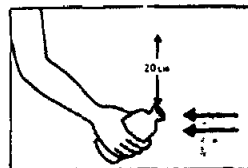


### B. Sampling from a watercourse or reservoir

1. Open a sterilized bottle by the techniques described in A.5 above.

2. Fill the bottle

Holding the bottle by the lower part, submerge it to a depth of about 20 cm, with the mouth facing slightly upwards; if there is a current, the bottle mouth should face towards the current.

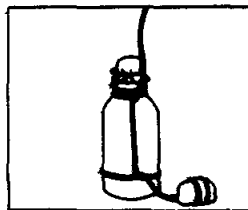


3. Stopper or cap the bottle as described in A.7 above.

### C. Sampling from dug wells and similar sources

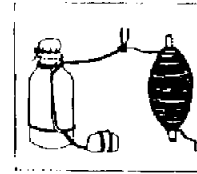
1. Prepare the bottle

With a piece of string, attach a stone of suitable size to a sterilized sampling bottle.



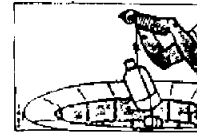
2. Attach string to bottle

Take a 20 metre length of clean string rolled around a stick and tie the end to the bottle neck. Open the bottle as described in A.5 above.



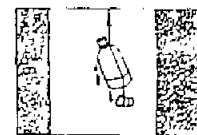
3. Lower the bottle

Lower the bottle, weighted down by the stone into the well, unwinding the string slowly. Do not allow the bottle to touch the sides of the well.



4. Fill the bottle

Immerse the bottle completely in the water and lower to the bottom of the well.



5. Raise the bottle

Once the bottle is judged to be filled, re-wind the string round the stick to bring up the bottle. If the bottle is completely full, discard some water to provide an air space. Stopper or cap the bottle as described in A.7 above.

# **ANNEX 8**

## **NON-PROFIT-MAKING SUPPLIERS FOR TROPICAL LABORATORIES**

### **INTERNATIONAL DISPENSARY ASSOCIATION (IDA)**

P.O.Box 3098, 1003 AB Amsterdam, The Netherlands

Tel: (0031)2903 3051 Fax: (0031)2903 1854 Telex: 13566 IDA NL

### **TECHNOLOGIE TRANSFER MARBURG**

Siemenstrasse 18, D-3550 Marburg, Germany

Tel: (0049)06421-82031 Fax: (0049)06421-81580

### **ECHO**

Ullswater Crescent, Coulsdon Surrey CRS 2 HR, United Kingdom

Tel: (0044)81-6602220 Fax: (0044)81-6680751 Telex: 924507 ECHOG

### **SOLMEDIA**

6, The Parade, Colchester Rd., Romford, Essex RM3 OAQ, United Kingdom

Tel: (0044)04023 43334 Fax: (0044)04023 81790 Telex: 896462 INFORM G

### **UNICEF PROCUREMENT AND ASSEMBLY CENTRE (UNIPAC)**

Freeport, DK 2100 Copenhagen, Denmark

Tel: (0045)31-262444 Fax: (0045) 31-269421 Telex: 19813

### **FOUNDATION 7 MPAS**

P.O. Box 596, 1000 Ah Amsterdam, The Netherlands

Tel: (0031)020 656541 Telex: 10433 IMPAS NL

### **HAMLO**

Wilhelminapark 52, 3581 NM Utrecht, The Netherlands

Tel: (0031)030-523792

(advice on laboratories; no equipment)

# **ANNEX 9**

## **MANUFACTURES OF PHOTOVOLTAIC EQUIPMENT**

### **ARCO SOLAR EUROPE**

McGraw Hill House, Shoppenhangers Road, Maidenhead, Berkshire SL6 20L,  
United Kingdom  
Tel: (0044)0628-75011

### **BP INTERNATIONAL LTD.**

Solar House, 36 Bridge Street, Leatherhead, Surrey KT228BZ,  
United Kingdom  
Tel: (0044)0372-377 899 Fax: (0044)0372-377 750 Telex: 263220 BP SIL G

### **CHRONAR LTD.**

Point West, 1040 Uxbridge Road, Hayes, Middlesex UB4 ORH,  
United Kingdom  
Tel: (0044)81-573-9807 Fax: (0044)81-573-5734 Telex: 498012 CHRNAR

### **DULAS ENGINEERING Ltd.**

Machynlleth, Powys SY20 9AZ, Wales, United Kingdom  
Tel: (0044)654 2400

### **HELIOS TECHNOLOGY Spa**

Via Postunia 11, 35010 Cormignano di Brenta, Italy  
Tel: (0039)49-943-0288 Fax: (0039)49-595-8255

### **SIEMENS SOLAR GmbH**

Frankfurter Ring 152, D-8000 Munich 40, Germany  
Tel: (0049)89-3500-2411 Fax: (0049)089-3500-2573

### **SOLAREX**

P.O. Box 6008, 1335 Piccard Drive, Rockville, Maryland 20850, USA  
Tel: (001) 301-948-0202

### **SOLENCO GmbH**

P.O. Box 100 219, D-4019 Manheim, Germany  
Tel: (0049)2224-78806 Fax: (0049)2224-79671

### **TELEFUNKEN SYSTEM TECHNIK GmbH**

Engineering Solar Energy Systems, Industriestrasse 23-33,  
D-2000 Wedel (Holstein), Germany  
Tel: (0049)4103-600 Fax: (0049)4103-604-701

# **ANNEX 10**

## **MANUFACTURERS OF MICROSCOPES**

### **CARL ZEISS**

P.O.Box 1369/1380, D-7082 Oberkochen, Germany  
Tel: (0049)07364-20 Fax: (0049)07364-202382 Telex: 71375155  
Field Microscope KF2, battery connection 12V on request

### **GILLET & SIBERT**

Kirktonfield Road, Neilston, Glasgow G78 3PL, United Kingdom  
Tel: (0044)41-8815825 Fax: (0044)41-8815828 Telex: 777298  
Analynx T Microscope

### **OLYMPUS OPTICAL Co. (Europe)**

Wendenstrasse 14-16, P.O.Box 104908, D-2000 Hamburg 1, Germany  
Tel: (0049)40-237730 Fax: (0049)40-233765  
CH2 Model

### **NIKON**

Haybrook, Halesfield 9, Telford, Shropshire TF7 4EW, United Kingdom  
Tel: (0044)952 587444 Fax: (0044)952 588009 Telex: 35509

### **K.W. KIRK & SONS Ltd.**

The Winship Industrial Estate, Milton, Cambridge CB4 48D, United Kingdom  
Tel: (0044)223-420102  
McArthur microscope, McArthur fluorescence microscope

# **ANNEX 11**

## **MANUFACTURERS OF BATTERY-DRIVEN AND MECHANICAL LABORATORY CENTRIFUGES**

**BAYER DIAGNOSTICS (Ames, Technicon)**  
B.P. 10-Z.1-R.N.1, F-95331 Domont Cedex, France  
Tel. (0033)(1) 39919212 Fax: (0033)(1) 39916531

**HETTICH**  
P.B. 260 D-7200 Tuttlingen, Germany  
Tel: (0049)(0)7461-7050 Fax: (0049)(0)7461-705 125

**STI SEPARATION TECHNOLOGY INC.**  
2340 South 2700 West, Salt Lake City, Utah, 84119-9801, USA  
Tel: (001)800-777-6668 Fax: (001)800-972-2533

**ROY RICKMAN**  
Riverdale, Beaford, Winkleigh, EX19 8AD, North Devon, United Kingdom  
Tel: (0044)8053 267

**Dr KENDALL SMITH**  
Dept. of Microbiology, University of Texas, San Antonio, Texas 78284-7758, USA  
Fax: (001)512-567-6612

**SEPARATION TECHNOLOGY INC.**  
2340 South 2700 East, Salt Lake City, UT 84119, USA  
(Hematocrit centrifuge, battery or mains powered)

**SOLMEDIA TROPICAL LABORATORY SUPPLIES**  
The Parade, Colchester Road, Romford, Essex RM3 0AQ, United Kingdom  
Tel: (0044)4023 43334 Fax: (0044)4023 81790

**TECHNICAL RESEARCH ASSOCIATES INC.**  
410 Chipeta Way, Suite 222, Salt Lake City, Utah 84108-1209, USA  
Tel: (001)801-582-8080 Fax: (001)801-582-8182

# **ANNEX 12**

## **MANUFACTURERS OF PORTABLE COLORIMETERS AND HAEMOGLOBINOMETERS**

### **ARTEL HAEMOGLOBINOMETER**

12 Depot street, Windham Maine, 04062, USA  
Tel: (001)207-8927531 Fax: (001)207-8928371

### **BAYER DIAGNOSTICS (Ames, Technicon)**

B.P. 10-Z.I.-R.N.1, F-95331 Domont Cedex, France  
Tel: (0033)(1)39919212 Fax: (0033)(1)39916531

### **BEIJING FILM MACHINERY RESEARCH INSTITUTE**

Jian gu wang Lang jia yuan, Beijing, Peoples' Republic of China

### **BIOTRON LTD.**

Church Lane, Bishop Thornton, Harrogate, Yorkshire HG3 3JP,  
United Kingdom  
Tel: (0044)423-770184 Fax: (0044)423-771874

### **HEMOCUE AB**

P.O. 1204, 262 23 Angelholm, Sweden  
Tel: (0046)431-17200 Fax: (0046)431-83035 Telex: 72052 HEMOQ S  
Note: order 1000 (5 packs) microcuvettes. State if a 110v or 220v battery charger is required.  
Two packs are available for non-rechargeable size AA(R6) or 8 R20 batteries.

### **Dr BRUNO LANGE GmbH**

Königsweg 10, D 1000 Berlin 37, Germany  
Tel: (0049)30-81, 6020 Fax: (0049)30-81602270

### **DELPHI INDUSTRIES LTD.**

27 Ben Lomond Crescent, Pakuranga, Auckland, New Zealand  
Tel: (0064)9-563-259 Telex: NZ 21992

### **KARL HECHT GmbH KG**

D- 8741 Sondheim, Germany  
Tel: (0049)9779 -221 Fax: (0049)9779-1868

### **Primecare BV**

P.O.B. 545, 7500 AN Enschede, The Netherlands  
Tel: (0031)53- 341111 Fax: (0031)53-341112

**S.E.R.O.A. SA**

16, rue des Orchidées, MC 9800, Monaco

Tel: (0033)92057231

Fax: (0033)93507256

**WALDEN PRECISION APPARATUS LTD.**

The Old Station, Linton, Cambridge CB1 6NW, United Kingdom

Tel: (0044)223-892688 Telex: 817330

**CROFT-GREINER INSTRUMENT LTD.**

Technorth, Harrogate Road, Leeds LS7 3NB, United Kingdom

Tel: (0044)532 624805 Fax: (0044)532 626446

**SWELAB INSTRUMENT AB**

P.O. Box 839, S-121 08 Johannehov, Sweden

Tel: (0046)8-810330 Fax: (0046)8-7229448 Telex: 17493

**LOVIBOND Hb test:**

**TINTOMETER Ltd**

Waterloo Road, Salisbury SP1 2JY, United Kingdom

Tel: (0044)722-327242 Telex: 47372 TINTOCO G

# **ANNEX 13**

## **SUPPLIERS OF PORTABLE INCUBATORS DISCUSSED IN THE GUIDELINES**

**TDR/WPRO**

World Health Organization, P.O.Box 2932, 1099 Manila, Philippines

Telegraph UNISANTE MANILA

TELEX 27652 - 63260 - 40365

Portable, includes 12V, 24 amp/h non-spill battery; unit can be used with any compatible 12 V DC source

**G.Q.F. MANUFACTURING COMPANY**

P.O. Box 1552, Savannah, GA 31402, USA

Tel: (001)912-236-0651

Portable; 110, 220 or 12 V

# **ANNEX 14**

## **COLD CHAIN EQUIPMENT FOR BLOOD STORAGE AND TRANSPORT**

### **Equipment**

Icelined refrigerator, compression type, 128 litres, top-opening Model MK142.  
Manufactured by Vestfrost.

Icelined refrigerator and icepack freezer, compression type, refrigerator 80 litres, freezer 40 litres, top-opening, Model TCW 1990.  
Manufactured by Electrolux.

Photovoltaic solar refrigerator and icepack freezer, top-opening, refrigerator 45 litres, icepack freezer 5 litres. Model VR50.  
Manufactured by BP International Ltd.

Long range cold box, Model RCW 25 with icepacks, 20.7 litres.  
Manufactured by Electrolux.

Long range cold box, Model RCW 12, 8.9 litres.  
Manufactured by Electrolux.

Long range cold box, Model 788-901 x 28, legend, 20 litres.  
Manufactured by Igloo Corporation.

Insulated carrier, Model 3504/38, 1.7 litres.  
Manufactured by Thermos Ltd.

### **Manufacturers**

VESTFROST A/S  
P.O. Box 2079, Spangsbjerg mollevej 100, DK-6705 Esjeberg O, Denmark  
Tel: (0045)75-142222 Fax: (0045)75-143939

ELECTROLUX (Luxembourg)  
4, rue de la Frontière, L-9412 Vianden, Luxembourg  
Tel: (00352)84595 Fax: (00352)848 11-300

BP INTERNATIONAL Ltd.  
Solar House, Bridge Street, Leatherhead, Surrey KT 22 8BZ,  
United Kingdom  
Tel: (0044)372-377 899 Fax: (0044)372-377 750

**IGLOO CORPORATION**

P.O. Box 19322, 1001 West Belt Drive, Houston, Texas 77224-9322

USA

Tel: (001)713-465-2571 Fax: (001)713-973-4845

**THERMOS LTD.**

Ongar Road, Brentwood, Essex CM15 9AY, United Kingdom

Tel: (0044)277-213-404 Fax: (0044)277-260-071

For further information on these and other items of refrigeration equipment, see WHO/EPI Product Information sheets [6].

# **ANNEX 15**

## **MANUFACTURERS OF PHOTOVOLTAIC REFRIGERATORS**

### **ELEXTROLUX**

4, rue de la Frontière, L-9412 Viandon, Luxembourg  
Tel: (00352)84595 Fax: (00352)848-11 300

### **KISSMANN**

Gundermannstrasse 7, D-8000 Munchen 45, Germany  
Tel: (0049)89-313/5632 Fax: (0049)89-314/8115

### **CHRONAR Ltd.**

Point West, 1040 Uxbridge Road, Hayes, Middlesex, UB4 ORH,  
United Kingdom  
Tel: (0044)81-573-9807 Fax: (0044)81-573-5734 Telex: 498012 CHRNAR

### **ARCO SOLAR EUROPE**

McGraw Hill House, Shoppenhangers Road, Berkshire SL6 20L,  
United Kingdom  
Tel: (0044)628-75011

### **DULAS ENGINEERING Ltd.**

Machynlleth, Powys SY20 9AZ, United Kingdom  
Tel: (0044)654-2400

# **ANNEX 16**

## **MANUFACTURERS OF WATER PURIFICATION SYSTEMS**

**Aluminium filter, gravity, type capacity 9 litres (output: 80 litres per 24 hours)**

**FAIREY INDUSTRIAL CERAMICS LTD.**

Filleymore, Stone, Staffs ST15 5 OPU, United Kingdom

Tel: (0044)0785-813241 Fax: (0044)0785-818733

(Doulton and British Berkfield Filters,  
Sterasyl candle filters)

**ECHO**

Uhhswater Crescent, Coulsdon Surrey CR5 2HR, United Kingdom

Tel: (0044)81-6 60-2220 Fax: (0044)81-668-0751 Telex: 947507 ECHO G

**Bench Deionizer**

**J. BIBBY SCIENCE PRODUCTS LTD.**

Stone, Staffordshire, ST15 0SA, United Kingdom

Tel: (0044)785-812121

**SURE WATER**

P.O. Box 5, Route 58 Business Highway, Lawrenceville, VA 23868, USA

Tel: (001)804 848-0059 Fax: (001)804 848-0959

**PERMUTIT COMPANY Ltd.**

Permutit House, 632-652 London Road, Isleworth, Middlesex TW7 4EX, United Kingdom

Tel: (0044)81 560 6431 Fax: (0044)81 568 9772 Telex: 924640

# ANNEX 17

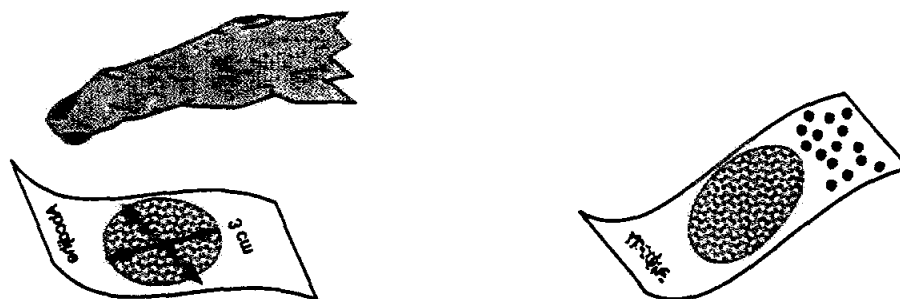
## FILTER PAPER TECHNIQUE FOR COLLECTION AND TRANSPORT OF BODY FLUID SPECIMENS

### General

The transport of liquid specimens soaked on filter paper is a simple and safe procedure. The filter paper can be used in any format but is commonly incorporated into a form or card specifically constructed for sample collection. All kinds of body fluids can be absorbed, although the technique is most often used for the collection of blood. The card can be easily transferred to a distant laboratory for screening or confirmatory testing. Body fluid absorbed on a filter paper can be processed for qualitative and/or quantitative serological and immunological investigations. Suitable filter paper is Whatman no. 1 or Schleicher and Schuell<sup>1</sup>. Cards with incorporated filter paper, which can also be used for registration of the patient and filing, can be obtained from Schleicher and Schuell.

### Technique for blood sampling

1. The wearing of gloves is recommended for blood sampling. It is important that the filter paper surface does not come into contact with gloved hands or any other material, solutions and lotions, prior to and during the entire process of sampling.
2. Complete the patient's data on the card with a ball-point pen. Do not touch the filter paper circle area.
3. Clean the puncture site on the patient's finger tip, or heel if an infant, with 70 % alcohol. Wipe the site dry with a sterile gauze. Use a sterile disposable lancet for puncture. Wipe away the first drop of blood with dry sterile gauze.



**Figure A.1 Blood sampling on filter paper**

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<sup>1</sup> Schleicher and Schuell GmbH, P.O. Box 4, D-3354 Dassel, Germany  
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4. Gently touch the filter paper against a large drop of blood and allow the blood to soak through, until the preprinted circle on the filter paper is completely filled. Avoid squeezing the punctured site as this will cause haemolysis of the specimen and a dilution of the blood with tissue fluids. Do not layer successive drops of blood in the printed circle because this may cause caking. Do not apply blood to the filter paper more than once. Apply blood to one side of the filter paper only. Incompletely blood-soaked circles are not acceptable
5. Allow the blood specimen to dry for 3 hours in the air in a horizontal and preferably elevated position (to avoid contamination and to allow better circulation of the air around the card for drying). Do not let the specimen come into contact with any surface, direct heat or sunlight. Do not refrigerate the samples.
6. Place each dry specimen card into an envelope or a small plastic bag, add a few granules of desiccant and close the envelope hermetically for mailing. Store the filter paper in a plastic bag in a cool dark dry place. Specimens that have been stored up to three months, under appropriate conditions, may give acceptable results.

# RECOMMENDED LITERATURE

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