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Environmental and host factors associated with persistent lower respiratory tract symptoms or asthma following acute environmental exposure to sulphur dioxide (S02).

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APPENDIX 1. Questionnaire

Macassar – AECI fire disaster medical claimants project, screening questionnaire - 2001

Date:_____

Respondent: ____ Claimant ____ Parent or Guardian _____

Claim no. _____

Personal information:

Surname: _____

First name: _____

ID No. _____

Address: _____

_____

Phone No: (H)_____(W)_____

Gender: ____ Female ____ Male

Date of Birth: ____/____/____ Age: _____

B. EXPOSURE INFORMATION

1. What was your address at the time of the fire?

_____

2. Where you in the Macassar area at time of the fire? **Yes__**or _____**No**
   If **No,** when did you return to Macassar ?

Datum_____

Day_____

Time_____

3. If **Yes**, in which area or address were you when you became aware of the fire?_____

3.1What was the time? _____

3.2 Were you ____ indoors? _____ outside at time of detection?

Please list your movements in the Maccasar area during the first 36 hours after the fire was reported, from 6am (16/12/95) to 6pm (17/12/95).

Date	**Day**	**Time in**	**Time out**	**Inside (I)** **Outside (O)** **Both (B)**	**Area** **Address**	**Smelled anything**	**Expo sure** **time**

C. HEALTH EFFECTS

What were your main medical symptoms that you experience as a result of exposure to the smoke from the fire?

a) _____

b) _____

c) _____

Nature of symptoms

Please indicate whether you have/had the following symptoms on a regular basis (almost every day).

0 = No symptoms
1 = Symptoms present
2 = Symptoms present, Better
3 = Symptoms present, No change
4 = Symptoms present, Worse

SYMPTOMS	**Before the fire**	**Within 2 weeks after the fire**	**At 1 month after the fire**	**At 1 year after the fire**	**During the past 4 weeks**
Constitutional Dizziness					
Headache					
Fatigue					
Gastro-intestinal Nausea/ Vomiting					
Diarrhoea					
Stomach pain/ cramps					

SYMPTOMS	**Before the fire**	**Within 2 weeks after the fire**	**At 1 month after the fire**	**At 1 year after the fire**	**During the past 4 weeks**
Skin Burning skin					
Skin rash					
Eyes Burning/itchy eyes					
Watery eyes					
Blurred vision					
Nose/Throat Burning nose					
Decreased sense of smell					
Hoarse voice					
Burning, itchy, sore throat					
Respiratory Chest pain					
Cough					
Shortness of breath					
Tight chest					
Wheeze					
Phlegm in your chest					
Asthma					
Bronchitis					
Other lung problems					

SYMPTOMS	**Before the fire**	**Within 2 weeks after the fire**	**At 1 month after the fire**	**At 1 year after the fire**	**During the past 4 weeks**
Neuro-Psych Can't concentrate					
Difficulty remembering things					
Feeling downhearted or sad or depressed					
Anxious					
Having "nerves" troubles					
Other symptoms Specify:_____ _____ _____					

2.1 More details of other symptoms:

_____

_____

2.2 Comments about any of the specific symptoms mentioned above:

_____

_____

2.3 Have you ever been treated for Tuberculosis? ___ Yes ___ No

2.3.1 If Yes, when? (Year) _____
2.3.2 Have you completed you course of treatment? ___ Yes____No

2.4 Current Medications:

a) _____
b) _____
c) _____
d) _____

2.5 Smoking history: ___Current smoker ___ Ex-smoker ___ Never

If current, how many cigarettes per day _____

3. Reproductive concerns

	Yes	No

3.1 Have you had a child in the last 5 years?

If ***Yes,*** answer the next questions:

3.1.1 Did your child have a low birth weight?

What was the weight? _____ grams

3.1.2 Did your child have a birth defect?

Please describe _____

_____

3.2 In the last 5 years, have you attempted to have a child without success?

Please describe _____

_____

4. Health-related quality of life assessment (SF-36E)

Please answer the following questions that relate to the quality of your health and life before and after the fire.

Instructions: *Please cross only one box.* ***For children****, for any question where the word* ***"work"*** *appears, replace it with the word* ***"school"*****.**

1. In general, would you say your health is:

Excellent Very Good Good Fair Poor

2. Compared to one year ago, how would you rate your health in general now? **(Cross one)**

Much better now than one year ago
Somewhat better now than one year ago
About the same as one year ago
Somewhat worse now than one year ago
Much worse than one year ago

3. Have you had any of the following problems with your work or other regular daily activities as a result of your **physical** health.

	1 = Yes **2 = No**	Before the Fire	At 1 month After the fire	At 1 year after the fire	During the past 4 weeks
a.	Cut down the amount of time you spent on work (school) or other activities.				
b.	Accomplished less than you would like.				
c.	Were limited in the kind of work (school) or other activities.				
d.	Had difficulty performing the work (school) or other activities (e.g., it took extra effort).				
e.	**For children:** Not growing normally as children of your age (milestones)				

4. Have you had any of the following problems with your work or other regular daily activities as a result of your **emotional** health (such as feeling depressed or anxious)?

	1 = Yes **2 = No**	Before the Fire	At 1 month after the fire	At 1 year After the fire	During the past 4 weeks
a.	Cut down the amount of time you spent on work (school) or other activities.				
b.	Accomplished less than you would like.				
c.	Were limited in the kind of work (school) or other activities.				
d.	Had difficulty performing the work (school) or other activities (e.g., it took extra effort).				

5. Please answer the following questions according to the extent that you have experienced the following:

1= Not at all	4= Quite a bit
2= Slightly	5 = Extremely
3= Moderately	

		Before the Fire	At 1 month after the fire	At 1 year After the fire	During the past 4 weeks
a.	To what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, partners neighbours, or groups?				
b.	How much bodily pain have you had?				
c.	How much did bodily pain interfere with your normal work (including both work outside the home and housework?)				

6. These questions are about how you feel and how things have been with you since the time of the fire. For each question, please give the one answer that comes closest to the way you have been feeling and for how much of the time: *Please mark the appropriate box to indicate the response.*

1= All of the time	4= Some of the time
2= Most of the time	5= A little of the time
3= A good bit of the time	6= None of the time

		Before the Fire	At 1 month after the fire	At 1 year after the fire	During the past 4 weeks
a.	Did you feel full of pep?				
b.	Have you been a very nervous person?				
c.	Have you felt so down in the dumps that nothing could cheer you up?				
d.	Have you felt calm and peaceful?				
e.	Did you have a lot of energy?				
f.	Have you felt downhearted and blue?				
g.	Did you feel worn out?				
h.	Have you been a happy person?				
i.	Did you feel tired?				
j.	How much has your physical or emotional health interfered with your social activities (like visiting with friends, relatives interaction with, etc.)?				

7. How **TRUE** or **FALSE** is each of the following statements for you?

1= Definitely True	4= Mostly False
2= Mostly True	5= Definitely False
3= Don't Know	

		Before the Fire	At 1 month after the fire	At 1 year after the fire	During the past 4 weeks
a.	I seem to get sick a little easier than other people.				
b.	I am as healthy as anybody I know.				
c.	I expect my health to get worse.				
d.	My health is excellent.				

8. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? *Please mark the appropriate box to indicate the response.*

		YES, limited a lot.	*YES, limited a little.*	*NO, not limited at all.*
a.	Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.	1	2	3
b.	Moderate activities, such as moving a table, pushing a vacuum cleaner, riding a bicycle or working in the garden.	1	2	3
c.	Lifting or carrying groceries.	1	2	3
d.	Climbing several flights of stairs.	1	2	3
e.	Climbing one flight of stairs.	1	2	3
f.	Bending, kneeling, or stooping.	1	2	3
g.	Walking more than a Km.	1	2	3
h.	Walking several blocks.	1	2	3
i.	Walking one block.	1	2	3
.	Bathing or dressing yourself.	1	2	3

D. HEALTH SERVICES USED

Please provide the following information:

1. Which health service providers (doctors, nurses, psychologists, clinics, hospitals, traditional healers) have you consulted before 16 December 1995, and the reason for the consultations:

Date	Doctor/Hospital/Clinic	Reason

Note: Append all medical certificates, special tests, reports to this page

2. Which health service providers (doctors, nurses, psychologists, clinics, hospitals, traditional healers) have you consulted after 16 December 1995, and the reason for the consultations:

Date	Doctor/Hospital/Clinic	Reason

Note: Append all medical certificates, special tests, reports to this page

3. If no health service providers (doctors, nurses, psychologists, clinics, hospitals, traditional healers) were consulted after 16 December 1995 state the reason for not doing so?

_____

_____

4. Is there any other information you would like to share with us concerning your health problems that may have resulted from exposures during the fire?

5. According to your opinion, which part of your body or organs have been affected or damaged by the fire for which you have utilized health care facilities?

PHYSICAL EXAMINATION

→ Claimant to undress to waist (shirt or top off) and remove shoes

0. Height_____ Weight_____

1. General *(pallour, cyanosis, wasting, etc.)*:

_____

2. Eyes: _____

(note any conjunctival irritation, erosions, lacrimation, scarring, or corneal scarring)

3. Eardrums: _____

4. Nose: _____

(note the condition of mucosa, erosions, allergic characteristics)

5. Mouth and throat:_____

6. Skin: _____

(note any lesions and history of each, especially in relation to the sulphur fire)

7. CVS: _____

Pulse_____BP_____Heart sounds_____

8. Chest: _____

Rate_____Air entry_____Wheezes / Crackles_____

Peak flow_____

_____

9. Abdomen: _____

_____

10. Mental state: _____

(note appearance, behaviour, speech, language use and mood)

11. Other findings: _____

_____

_____

OVERALL MEDICAL ASSESSMENT

1. The symptoms of the client relate to:

Respiratory:
Dermatological:
Ophthalmic:
Psychological:
Obstetrical/Gynaecological:
Ear/Nose/Throat:
Paediatric:
Other:

2. The following medical reports and/or certificates were available and perused:

a)
b)
c)
d)

Nurse's comments:

_____
_____
_____
_____
_____

FOLLOW UP: Please include indication for referral

	Refer to Medical Reference Panel:	
	Refer to General Practitioner Panel:	
	Refer to Lawyer:	
	Refer to Other Primary Healthcare Provider:	
	Other e.g. advice office:	

APPENDIX 2: DATA CAPTURE SHEET

Environmental and host factors associated with persistent lower respiratory tract symptoms or asthma following acute environmental exposure to SO2.

Data Capture sheet

Card 1

Data Capture No _____ [ ][ ][ ] 1-3

A. IDENTIFICATION DATA / DEMOGRAPHICS

1. Surname _____

2. First name/s _____

3. Address _____

_____

_____

_____

4. Gender Male [1] [ ] 4
Female [2]

5. Q No _____ [ ][ ][ ][ ] 5-8

7. Date of birth Day_____Month_____Year_____ ____ [ ][ ][ ][ ][ ][ ] 9-14

8. Age at time of disaster _____ [ ][ ] 15-16

9. Height _____ cm [ ][ ][ ] 17-18

B. EXPOSURE HISTORY

1. Present in Macassar Yes [1] [ ] 20
No [2]

2. Location at time of awareness Inside [1] [ ] 21
Outside [2]

3. Level of exposure per hour = 21 hours

	Date	*Hour*	*Time*	*SO2 Concentration ppm*
3.1	16.12.95	1	6-7pm	
3.2		2	7-8pm	
3.3		3	8-9pm	
3.4		4	9-10pm	
3.5		5	10-11pm	
3.6		6	11-12pm	
3.7	17.12.95	7	12-1am	
	Date	*Hour*	*Time*	*SO2 Concentration ppm*
3.8	17.12.95	8	1-2am	
3.9		9	2-3am	
3.10		10	3-4am	
3.11		11	4-5am	
3.12		12	5-6am	
3.13		13	6-7am	
3.14		14	7-8am	
3.15		15	8-9am	
3.16		16	9-10am	
	Date	*Hour*	*Time*	*SO2 Concentration*
3.17	17.12.95	17	10-11am	
3.18		18	11-12md	
3.19		19	12-1pm	
3.20		20	1-2pm	
3.21		21	2-3pm	

22-29
30-37
38-45
46-53
54-61
62-69
70-77

Card 2

1-8
9-16
17-24
25-32
33-40
41-48
49-56
57-64
65-73

Card 3

1-8
9-16
17-24
25-32
33-40

C. PREVIOUS MEDICAL HISTORY

1. Chest pain — Yes [1] / No [2] — 41
2. Coughing — Yes [1] / No [2] — 42
3. Shortness of breath — Yes [1] / No [2] — 43
4. Tight chest — Yes [1] / No [2] — 44
5. Wheeze — Yes [1] / No [2] — 45

6. Phlegm in the chest	Yes	[1]	☐ 46
	No	[2]	
7. Asthma	Yes	[1]	☐ 47
	No	[2]	
8. Bronchitis	Yes	[1]	☐ 48
	No	[2]	
9. T.B	Yes	[1]	☐ 49
	No	[2]	

D. SMOKING HISTORY

1 Never	[1]	☐ 50
2 Ex-smoker	[2]	
3.1 Current smoker	[3]	
3.2 If current, how many per day? _____		☐☐ 51-52

E. ACUTE SYMPTOMS REPORTED AT TIME OF FIRE

1. General

1.1 Burning eyes	Yes	[1]	☐ 53
	No	[2]	
1.2 Burning / sore nose	Yes	[1]	☐ 54
	No	[2]	
1.3 Burning / sore throat	Yes	[1]	☐ 55
	No	[2]	
1.4 Burning / sore chest	Yes	[1]	☐ 56
	No	[2]	
1.6 Chest pain	Yes	[1]	☐ 57
	No	[2]	
1.7 Vomiting / nausea	Yes	[1]	☐ 58
	No	[2]	
1.8 Diarrhoea	Yes	[1]	☐ 59
	No	[2]	

1.9 Headache	Yes	[1]	☐ 60
	No	[2]	
1.10 Skin irritation	Yes	[1]	☐ 61
	No	[2]	

2. Asthma like symptoms

2.1 Dyspnoea	Yes	[1]	☐ 62
	No	[2]	
2.2 Coughing	Yes	[1]	☐ 63
	No	[2]	
2.3 Wheezing	Yes	[1]	☐ 64
	No	[2]	
2.4 Tight chest	Yes	[1]	☐ 65
	No	[2]	

F. HEALTH OUTCOMES

1. Based on symptoms

1.1 symptoms if any, not related to exposure	[1]	☐ 66
1.2 symptoms resolved within I month	[2]	
1.3 symptoms resolved within I year	[3]	
1.4 symptoms still present	[4]	

2. Based on lung function test results, ml

2.1 Pre-bronchodilater FEV1			Card 4 ☐☐☐ 1-3
2.1.1 Post-bronchodilater FEV1			☐☐☐ 4-6
2.1.2 Predicted FEV1			☐☐☐ 7-9
2.2 Pre-bronchodilater FVC			☐☐☐ 10-12
2.2.1Post-bronchodilater FVC			☐☐☐ 13-15
2.2.2 Predicted FVC			☐☐☐ 16-18

3. Based on final diagnosis by specialist

3.1 RADS	Yes	[1]	☐ 19
	No	[2]	

3.2 Ashtma aggravation	Yes No	[1] [2]	20
3.3 COAD	Yes No	[1] [2]	21
3.4 Pulm T.B	Yes No	[1] [2]	22
3.5 Rhinitis aggravation	Yes No	[1] [2]	23
3.6 RUDS	Yes No	[1] [2]	24
3.7 Sinisitus	Yes No	[1] [2]	25
4. Subject status	Case Control	[1] [2]	26

ENVIRONMENTAL AND HOST FACTORS ASSOCIATED WITH PERSISTENT LOWER RESPIRATORY TRACT SYMPTOMS OR ASTHMA FOLLOWING ACUTE ENVIRONMENTAL EXPOSURE TO SULPHUR DIOXIDE ($S0_2$).

PATIENT INFORMATION SHEET: APPENDIX 3

Good Day,

We are **Roslynn Baatjies** and **Sister F Omar** from the University of Cape Town medical school. We are investigating the quality of life and respiratory health of residents in Macassar following the exposure to sulphur dioxide from the fire disaster in 1995. The aim of the study is to investigate the environmental factors (exposure to sulphur dioxide) associated with persistent lower respiratory (chest) symptoms among residents acutely exposed to the sulphur vapours. We would be most grateful if you would consider participating in this study.

Title of research project

ENVIRONMENTAL AND HOST FACTORS ASSOCIATED WITH PERSISTENT LOWER RESPIRATORY TRACT SYMPTOMS OR ASTHMA FOLLOWING ACUTE ENVIRONMENTAL EXPOSURE TO SULPHUR DIOXIDE ($S0_2$).

Description of the research project

If you agree to participate you will be asked to complete the following tests:

a) **Complete a questionnaire**. An occupational health nurse, Sister F Omar, a member of our study team will interview you in privacy to complete the questionnaire. You will be asked questions about any breathing or chest problems, other medical questions, and where you were at the time of the fire.

b) **Medical examination:** An occupational health nurse, will perform a physical examination at the Macassar clinic to determine your overall health status and the presence of any illness. If you have any respiratory problems you will be referred to a pulmonologist for further evaluation.

c) **Lung function/Breathing tests**
You will be asked to blow several times into a machine which measures how well your lungs are working and detects whether you have asthma.

Confidentiality of information collected

Your name will not appear in any reports on this study. The records of questionnaires, examinations and breathing tests will be kept completely confidential and will be seen only by members of the study team.

Withdrawal from study
Your participation in this study is completely voluntary and you are free to withdraw from the study at any time without penalty.

Risks and discomforts of the research

a) **From the questionnaire and breathing tests.** There are no risks from completing the questionnaire. There is a small chance that the initial breathing test could cause you to become light-headed or faint. Having you complete the test in a seated position under the observation of trained personnel greatly reduces the chance of your having such a problem.

b) **From the examination.** There are no risks from the examination.

Expected benefits to you and to others

You will be given a written copy of all your test results along with an explanation of what they mean, unless you tell us that you do not wish to receive this. The results will be given to your legal representative as well, to process your claim for compensation for the health effects suffered as a result of the fire.

Costs to you resulting from participation in the study

The study is offered at no cost to you.

Contact person.

You may contact one of the following persons for answers to further questions about the research, your rights, or any injury you may feel is related to the study.

University of Cape Town Researchers:
Dr. Mohamed Jeebhay, Telephone No. (021) 406-6309
Roslynn Baatjies/Sister Omar, Telephone No.: (021) 406-6665

ENVIRONMENTAL AND HOST FACTORS ASSOCIATED WITH PERSISTENT LOWER RESPIRATORY TRACT SYMPTOMS OR ASTHMA FOLLOWING ACUTE ENVIRONMENTAL EXPOSURE TO SULPHUR DIOXIDE (SO_2).

CONSENT FORM: APPENDIX 4

STUDY NO. _____

Consent of the participant

I have read the information given above, or it has been read to me. I understand the meaning of this information, Dr./Mr./Ms. _____ has offered to answer any questions concerning the study. By signing this form, I hereby consent to participate in the study.

Consent for medical release of documents

I_____ hereby consent to my legal representative, _____ and /or the medical team appointed by my legal representatives obtaining any medical records, reports or investigations pertaining to my medical history arising from the sulphur fire disaster in December 1995, from any doctor, hospital, clinic or other health professional. I also consent to any other medical information being released to the abovementioned that may be of relevance to my health problems prior to December 1995.

Documentation of the consent

One copy of this signed document will be kept together with our research records for this study. A copy of the information sheet about the study will be given to you to keep.

I understand that I am free to withdraw from the study at any time without penalty. I also understand that the records of questionnaires, examinations and breathing tests will be kept completely confidential and will be seen only by members of the study team.

_____ _____
Printed name of participant Signature, Mark, or Thumb Print

_____ _____
Interviewer's name (Print) Signature

DATE: _____

APPENDIX 5 a

MACASSAR – AECI FIRE DISASTER MEDICAL CLAIMANTS PROJECT

MEDICAL REFERENCE PANEL INITIAL ASSESSMENT FORM

Date:…… Assessor:……

0 Health status prior to Dec 1995: ILL ☐ WELL ☐

Diagnosis 1 ……
Diagnosis 2 ……

1 Exposure details (hours of exposure): ……..

2 Extent and severity of health effects at the time:

History

Symptoms (acute/subacute/chronic)	☐
Impaired quality of life	☐
GP/Casualty visits	☐
Specialist visits	☐
Hospitalisation	☐
Job/school change or loss	☐
Current medication usage	☐

Examination ☐ Specify:……
……

3. Main current health impairments:

	History	Examination	Refer?
Pulmonary			
Skin			
Eyes			
Psychological			
Obstetric/Reproductive			
Ear, nose, throat			
Paediatric			
Impaired quality of life			

4. Assessment:
Nurse: ……
Medical assessor: ……
Panel: ……

5. Follow up:

Lawyer	☐
GPP	☐
SPP	☐

APPENDIX 5 b

MACASSAR – AECI FIRE DISASTER MEDICAL CLAIMANTS PROJECT

MEDICAL REFERENCE PANEL FINAL ASSESSMENT REPORT

Q no: ……

Re:……..

1. Reports that she/he was exposed to SO2 plume (vapours, fumes and smoke) arising out of the AECI fire in Macassar on 15/16 December 1995 for …… hours

2. She/he had:
   [ ] No past medical history
   [ ] Regular medication history of prior to the fire……

3. She/he experienced symptoms, which required medical attention and/or medication:
   [ ] within 2 weeks of exposure
   [ ] within 1 month of exposure
   [ ] within 1 year of exposure
   [ ] in the past 4 weeks prior to assessment by the medical reference panel

4. She/he experienced symptoms referable to the:
   [ ] Skin
   [ ] Eye/s
   [ ] Ear, nose and throat
   [ ] Chest
   [ ] Psychological
   [ ] Reproductive system

5. Clinical examination at the time of the assessment revealed
   [ ] No obvious abnormality
   [ ] Abnormality (ies) present:
   ……..

6. She/he reports significant affectation of quality of life (as determined by the SF36 questionnaire) since the fire with regard to:
   [ ] physical activities at work/school/home
   [ ] emotional health

[ ] routine daily, social activities and amenities of life

Which was affected:

[ ] at 1 month after the fire

[ ] at 1 year after the fire

[ ] at present in the past 4 weeks prior to the assessment by the medical reference panel

7. Evaluation panel: He/she was referred to

[ ] General practitioners panel

[ ] Super practitioners panel

CONCLUSION:

The client's problems are:

a) [ ] not related to the exposure to sulphur dioxide vapours arising from the fire

b) [ ] probably related to the exposure to sulphur dioxide vapours arising from the fire, but which resolved within 1 month after exposure:

[ ] with documented medical evidence available

[ ] documented medical evidence not available

c) [ ] probably related to the exposure to sulphur dioxide vapours arising from the fire, but which resolved within 1 year after exposure:

[ ] with documented medical evidence available

[ ] documented medical evidence not available

d) [ ] probably related to the exposure to sulphur dioxide vapours arising from the fire, and are persistent to date:

[ ] with documented medical evidence available

[ ] documented medical evidence not available

SR. FAIEZA OMAR:……

MEDICAL REFERENCE PANEL

(Drs Mohamed Jeebhay, Shuaib Manjra, Jim te Water Naude and Rodney Esau)

Date:…….