

## Appendices

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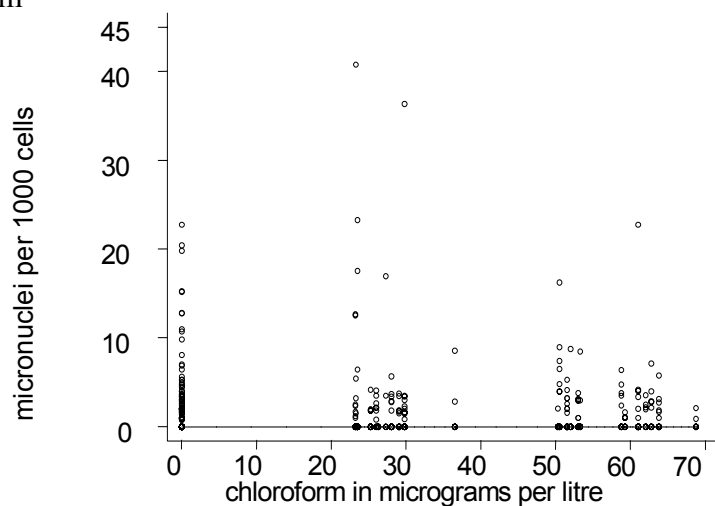
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# Appendix 1: Scatter plots (with smoothers) examining the relationship between available dose and frequency of micronuclei in bladder epithelial cells

Spearman's rho

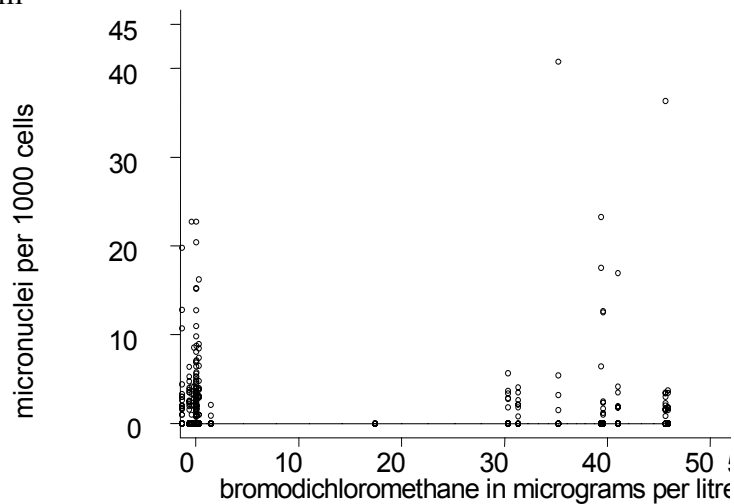
Chloroform

-0.12



Bromoform

-0.15

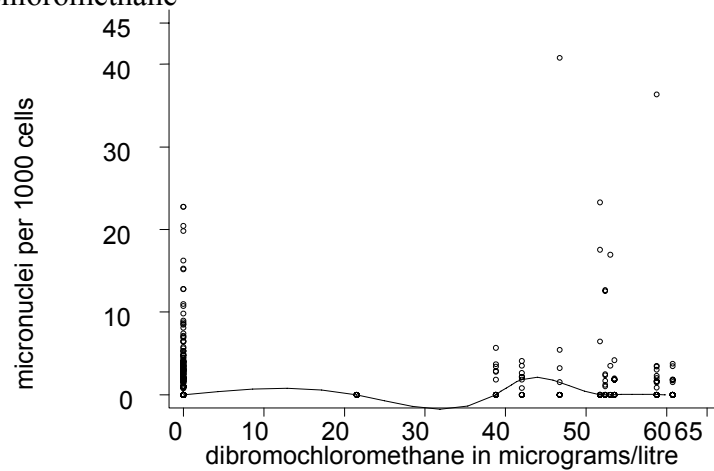


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Spearman's rho

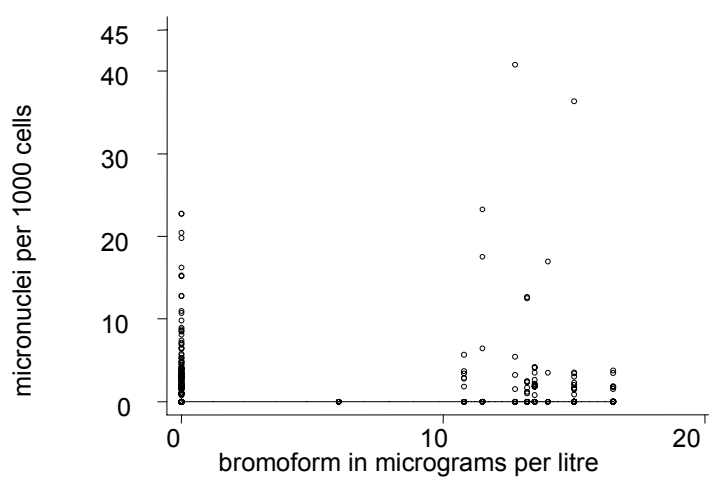
Bromodichloromethane

-0.13



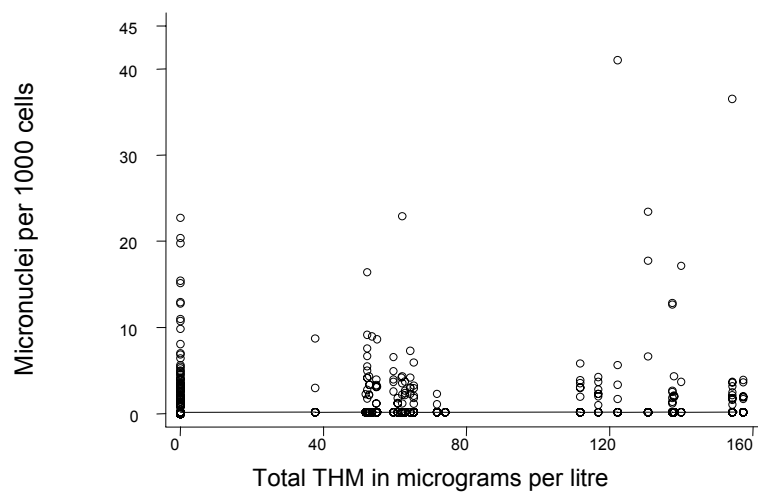
Bromoform

-0.16



Total THM

-0.13

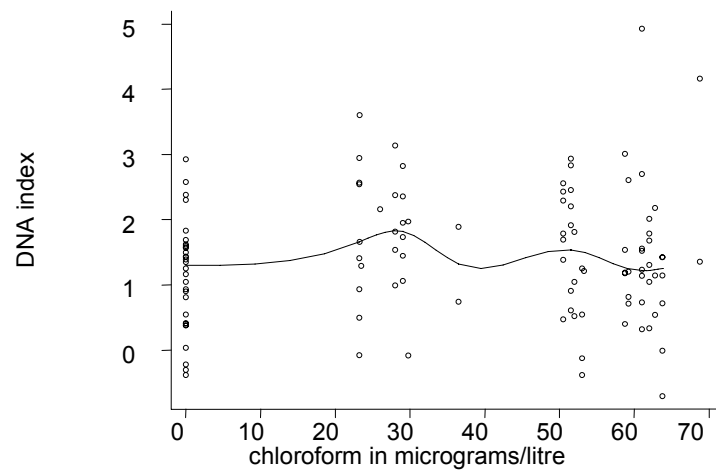


# Appendix 1a: Scatter plots (with smoothers) examining the relationship between available dose and DNA index

Spearman's rho

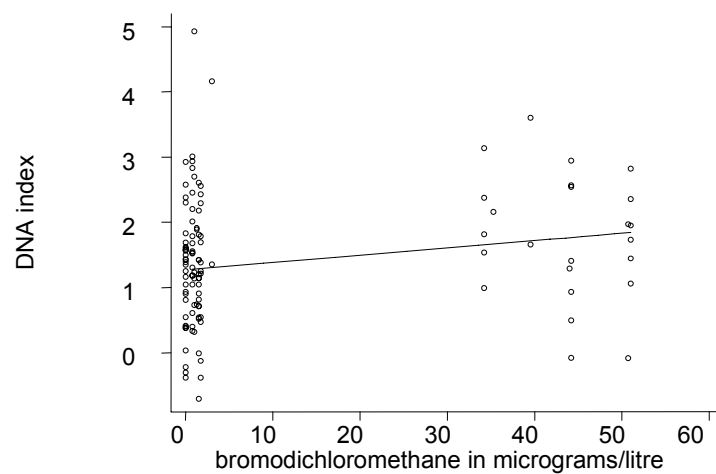
Chloroform

-0.01



Bromodichloromethane

0.17

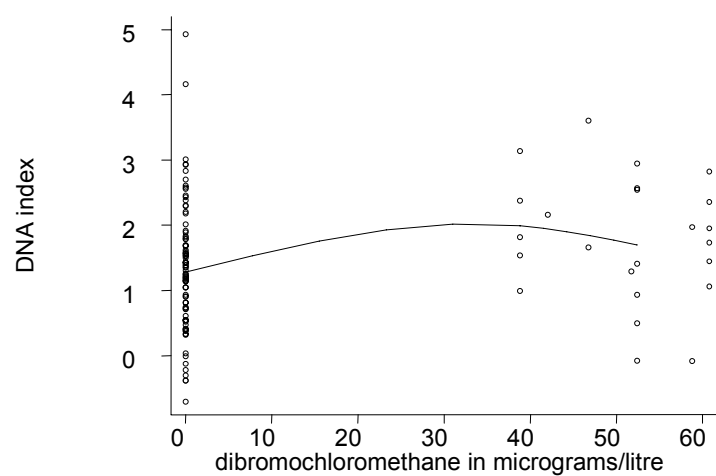


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Spearman's rho

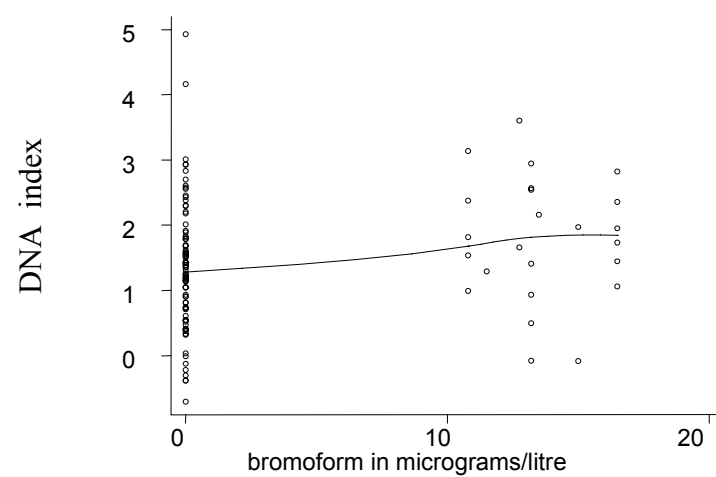
Dibromochloromethane

0.20



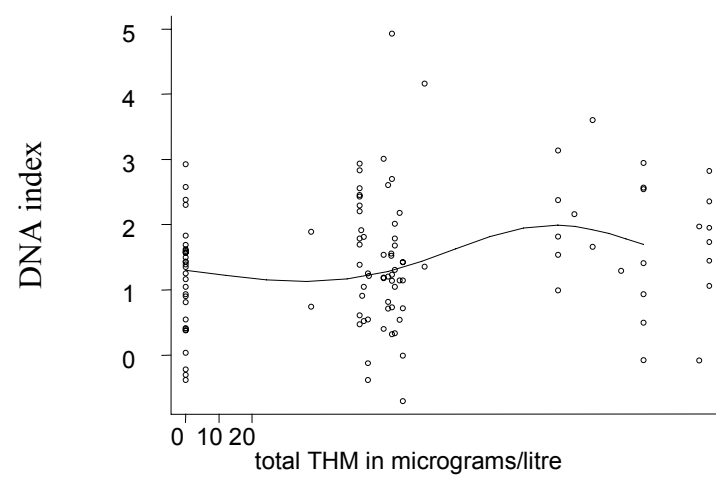
Bromoform

0.21



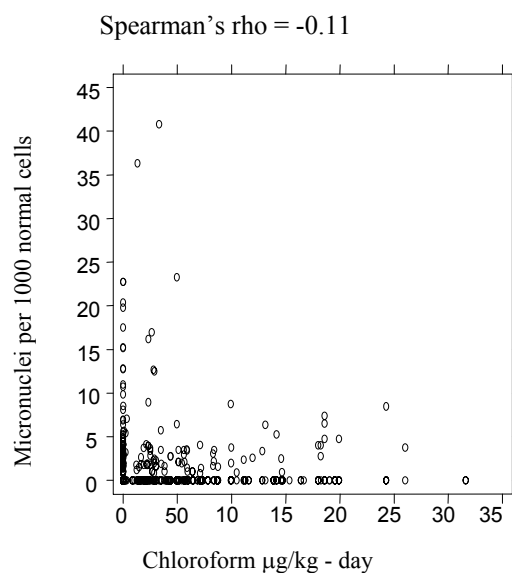
Total THM

0.15

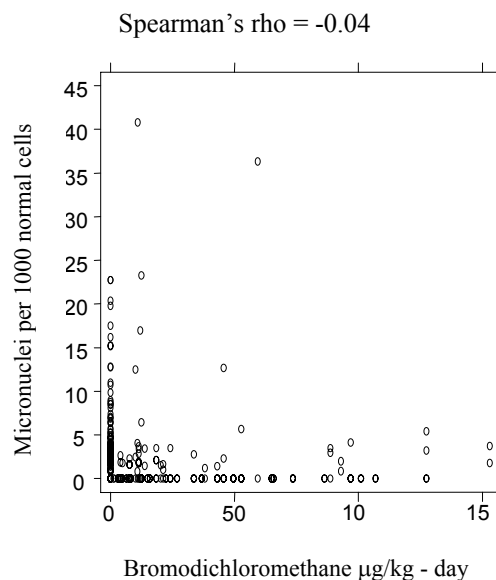
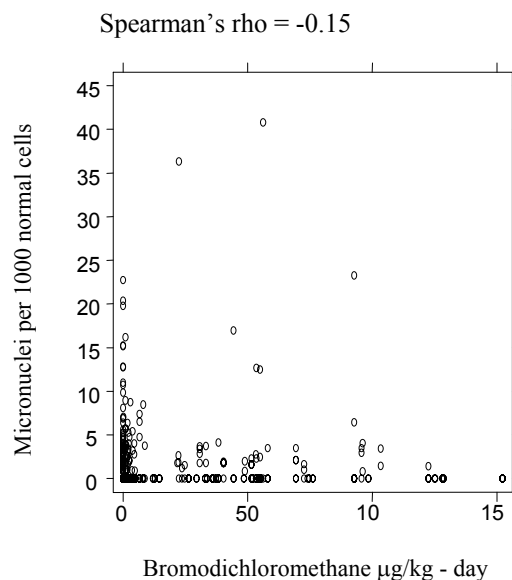
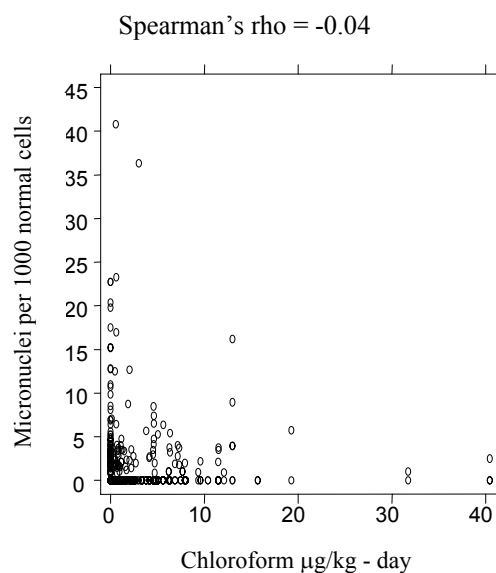


## Appendix 2: Scatter plots examining the relationship between intake dose and frequency of micronuclei in bladder epithelial cells

*Fluid intake diary*



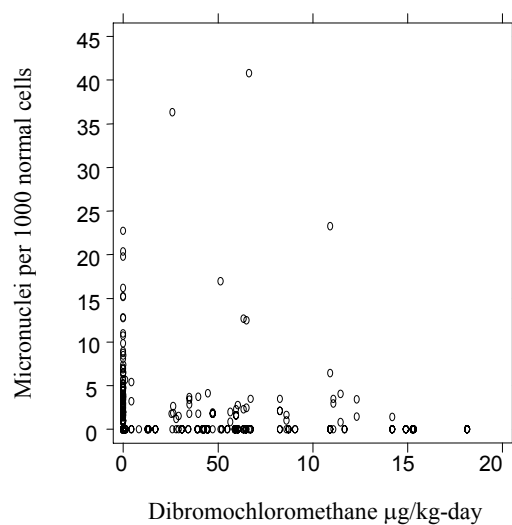
*Retrospective questionnaire*



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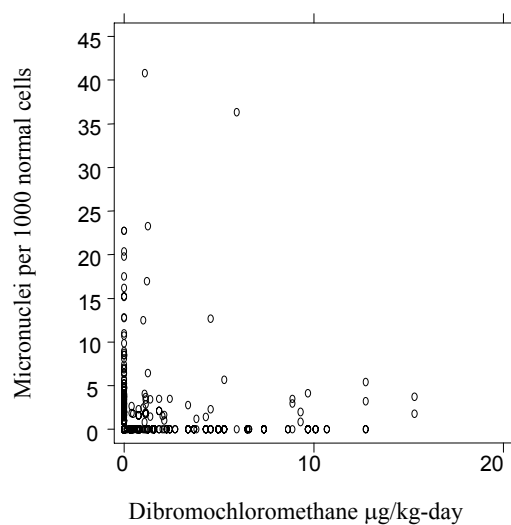
### *Fluid intake diary*

Spearman's rho = -0.07

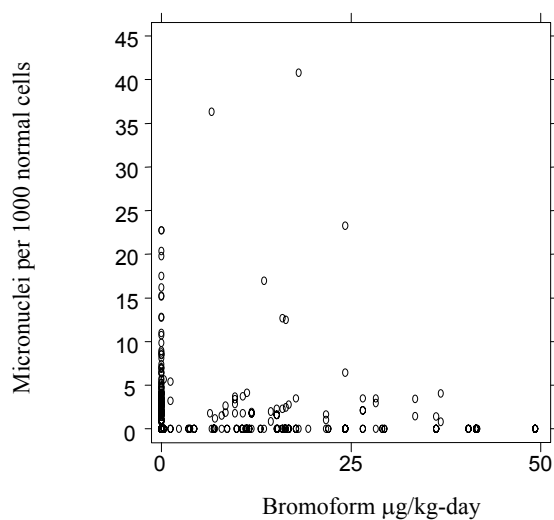


### *Retrospective questionnaire*

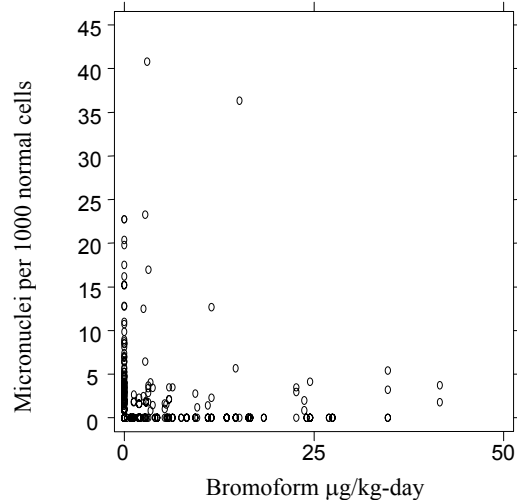
Spearman's rho = -0.04



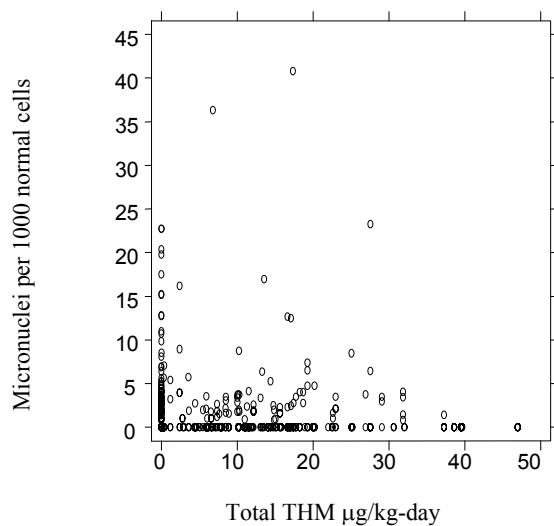
Spearman's rho = -0.04



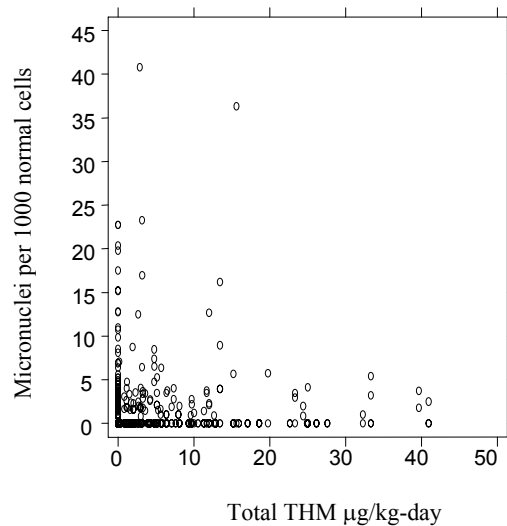
Spearman's rho = -0.03



Spearman's rho = -0.06



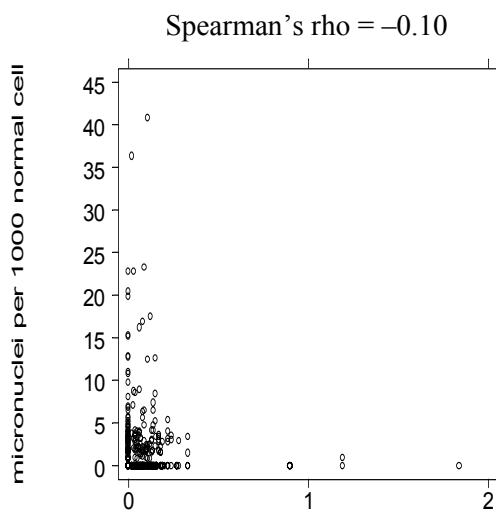
Spearman's rho = -0.04



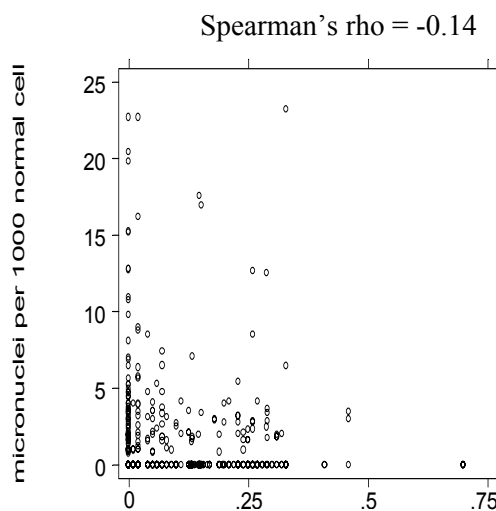
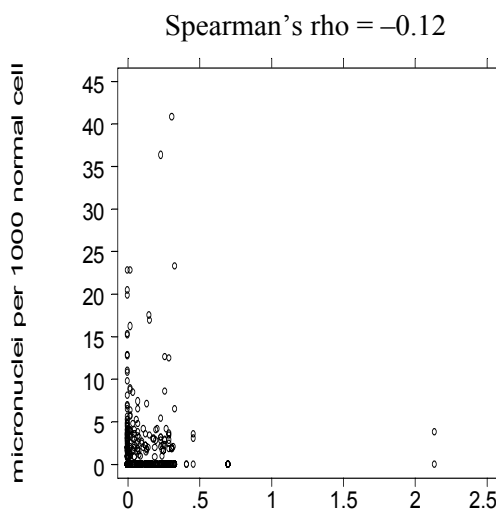
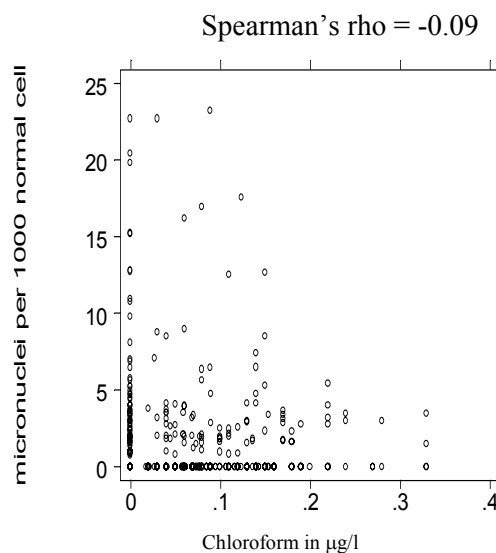


### Appendix 3: Scatter plots examining the relationship between internal dose and frequency of micronuclei in bladder epithelial cells

*All data*



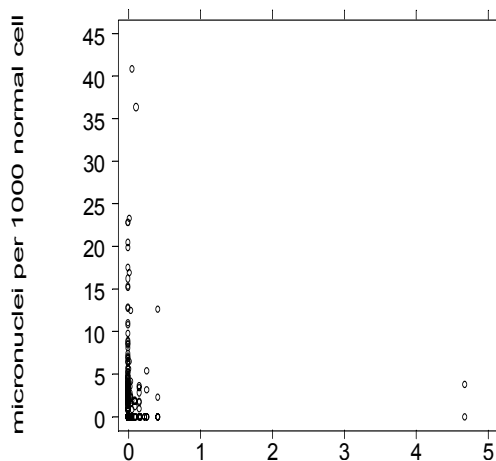
*Excluding outliers*



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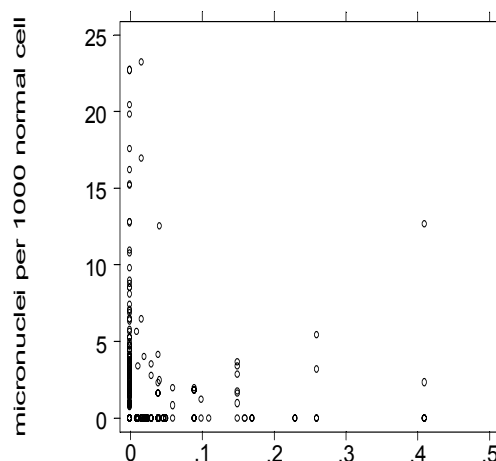
*All data*

Spearman's rho = -0.05

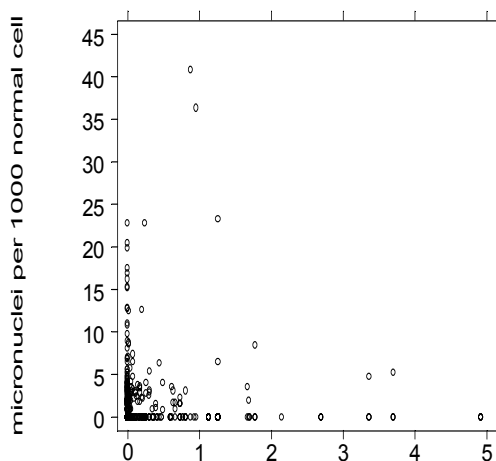


*Excluding outliers*

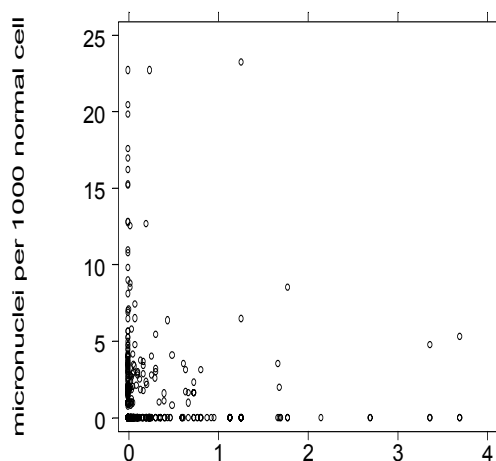
Spearman's rho = -0.07



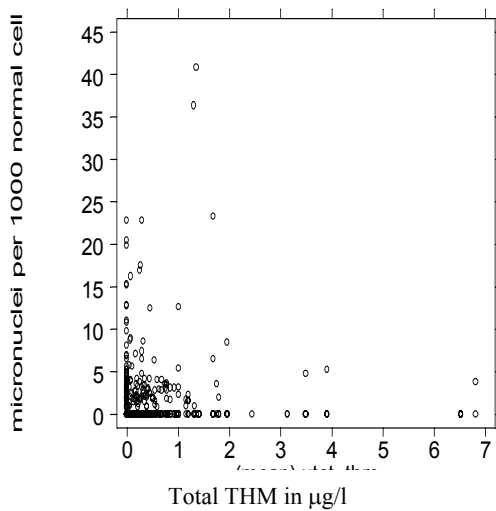
Spearman's rho = -0.07



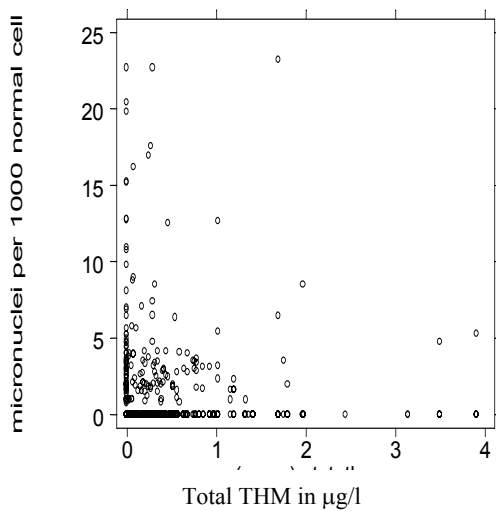
Spearman's rho = -0.07



Spearman's rho = -0.10



Spearman's rho = -0.11

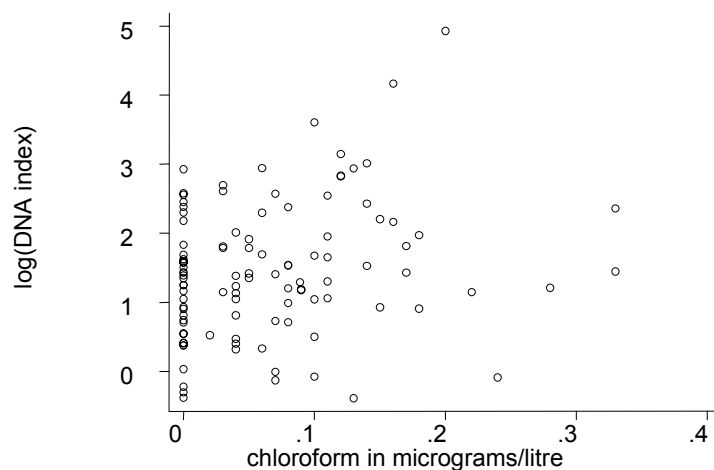


### Appendix 3a: Scatter plots examining the relationship between internal dose (excluding outliers) and DNA index from flow cytometry

Spearman's rho

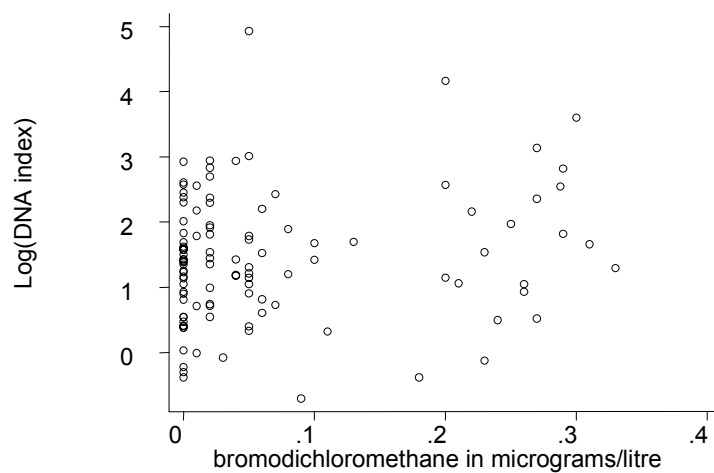
Chloroform

0.20



Bromodichloromethane

0.11

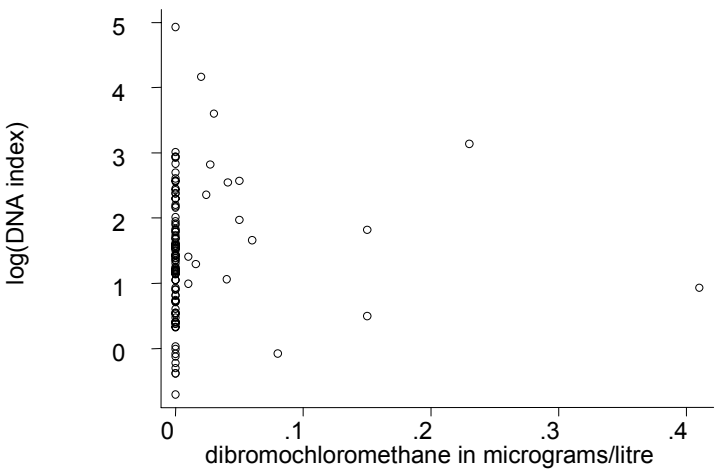


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Spearman's rho

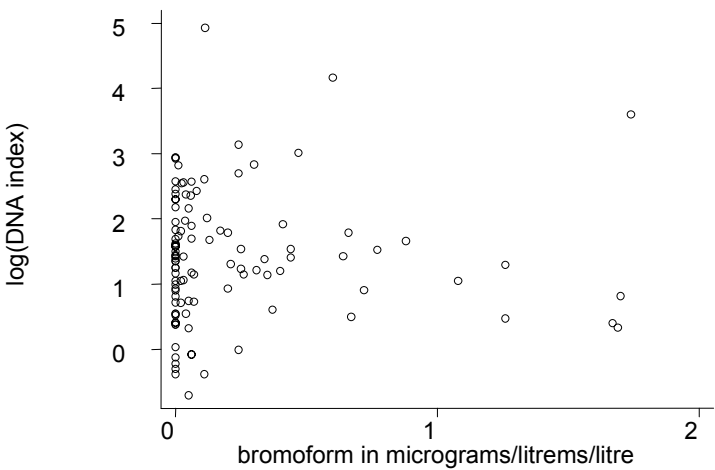
Dibromochloromethane

0.17



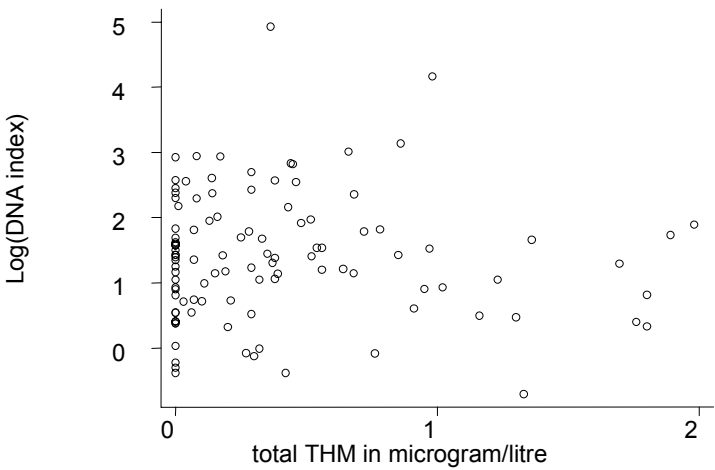
Bromoform

0.70



Total THM

0.82



#### Appendix 4: Correlation coefficients between available dose of THMs and potentially confounding variables

	Available dose of		
	chloroform	bromoform	total THM
Bladder infection prior to last 12 months	0.02	0.01	0.01
Kidney infection prior to the last 12 months	-0.07	0.00	-0.04
Family history of bladder cancer	0.11	0.00	0.05
Worked with dyes - ever	-0.10	-0.03	-0.08
Worked with dyes- last year	-0.09	-0.06	-0.09
Worked with chemicals - ever	-0.14	0.03	-0.03
Worked with electrical cables or making rubber	-0.03	-0.10	-0.10
Worked with leather - ever	0.07	-0.06	-0.04
Worked with paint - ever	-0.10	0.08	0.03
Worked with paint - last year	-0.13	0.17	0.11
Worked with paint - fortnight	-0.05	0.19	0.15
Worked as a truck driver - ever	-0.24	-0.07	0.18
Worked as a truck driver - last year	-0.10	-0.06	-0.10
Worked as a truck driver - last fortnight	-0.06	-0.08	-0.10
Used dyes in hobbies - ever	0.04	0.01	0.01
Used chemicals in hobbies - ever	-0.09	0.04	0.01
Worked with leather in hobbies - ever	-0.14	-0.04	-0.10
Worked with paint in hobbies - ever	-0.03	0.12	0.09
Worked with paint in hobbies - last year	-0.12	0.18	0.10
Worked with paint in hobbies - fortnight	-0.08	0.10	0.07
Other hobbies	0.08	0.08	0.09
Gardening or farming (recreational)	0.03	0.09	0.11
Use permanent hair dyes - ever	0.02	0.02	0.02
Used semi-permanent hair dyes - ever	0.00	0.12	0.11
Used hair rinses - ever	0.10	0.10	0.13
Smoke tobacco - ever	-0.03	-0.06	-0.08
Smoke tobacco - now	-0.15	-0.02	-0.11
Passive smoking	-0.21	-0.02	-0.13
Passive smoking - workplace	0.08	-0.01	0.02
Worked with dyes	-0.13	-0.02	-0.07
Worked with chemicals	-0.02	0.12	0.10
Worked with paint	-0.03	0.15	0.11
Worked as a truck driver	-0.10	-0.08	-0.13
Used paint in hobby	-0.20	-0.04	-0.09
Other hobbies	-0.08	-0.01	-0.04
Swimming in pool / chlorinated water	0.02	0.01	0.02
Smoked cigarettes	-0.14	-0.01	-0.09
Passive smoking	-0.09	0.02	-0.03
Serum folate level	0.40	0.09	0.28
Serum vitamin B12 level	0.09	0.16	0.19
Age	0.01	0.26	0.24

## Appendix 5: Correlation coefficients between intake dose of THM (from diary) and potentially confounding variables

	Intake dose from diary of		
	chloroform	bromoform	total THM
Bladder infection prior to last 12 months	-0.03	0.01	-0.01
Kidney infection prior to the last 12 months	0.02	0.05	0.04
Family history of bladder cancer	0.18	-0.04	0.07
Worked with dyes - ever	-0.07	-0.06	-0.09
Worked with dyes- last year	-0.02	-0.06	-0.06
Worked with chemicals - ever	-0.03	-0.02	-0.03
Worked with electrical cables or making rubber	-0.09	-0.06	-0.10
Worked with leather - ever	-0.03	-0.05	-0.06
Worked with paint - ever	-0.08	-0.02	-0.06
Worked with paint - last year	-0.04	0.08	0.03
Worked with paint - fortnight	0.01	0.10	0.08
Worked as a truck driver - ever	-0.08	-0.04	-0.06
Worked as a truck driver - last year	-0.06	-0.01	-0.04
Worked as a truck driver - last fortnight	-0.06	-0.11	-0.12
Used dyes in hobbies - ever	0.08	0.01	0.05
Used chemicals in hobbies - ever	-0.02	-0.03	-0.03
Worked with leather in hobbies - ever	-0.10	-0.06	-0.10
Worked with paint in hobbies - ever	-0.03	0.07	0.04
Worked with paint in hobbies - last year	-0.06	0.12	0.06
Worked with paint in hobbies - fortnight	0.00	0.16	0.12
Other hobbies	0.13	0.11	0.15
Gardening or farming (recreational)	0.12	0.16	0.20
Use permanent hair dyes - ever	0.01	-0.06	-0.04
Used semi-permanent hair dyes - ever	0.09	0.02	0.07
Used hair rinses - ever	0.15	0.23	0.25
Smoke tobacco - ever	-0.03	-0.01	-0.03
Smoke tobacco - now	-0.10	0.00	-0.06
Passive smoking	0.14	-0.02	-0.10
Passive smoking - workplace	0.01	-0.03	-0.02
<i>During the study period:</i>			
Worked with dyes	-0.07	-0.05	-0.07
Worked with chemicals	0.08	0.07	0.09
Worked with paint	0.03	0.09	0.08
Worked as a truck driver	-0.05	0.01	-0.03
Used paint in hobby	-0.05	-0.05	-0.07
Other hobbies	0.05	0.05	0.07
Swimming in pool / chlorinated water	-0.05	0.04	0.00
Smoked cigarettes	-0.09	0.02	-0.04
Passive smoking	-0.10	-0.06	-0.10
Serum folate level	0.29	0.03	0.20
Serum vitamin B12 level	0.01	0.09	0.08
Age	0.12	0.29	0.29

## Appendix 6: Correlation coefficients between intake dose of THMs (from questionnaire) and potentially confounding variables

	Intake dose from questionnaire of		
	chloroform	bromoform	total THM
Bladder infection prior to last 12 months	0.00	0.14	0.03
Kidney infection prior to the last 12 months	-0.08	0.00	-0.09
Family history of bladder cancer	0.00	0.00	0.04
Worked with dyes - ever	-0.08	-0.03	-0.08
Worked with dyes- last year	-0.04	-0.06	-0.04
Worked with chemicals - ever	-0.01	0.03	0.09
Worked with electrical cables or making rubber	-0.06	-0.10	-0.08
Worked with leather - ever	-0.05	-0.06	-0.06
Worked with paint - ever	0.03	0.08	0.12
Worked with paint - last year	-0.01	0.17	0.14
Worked with paint - fortnight	0.03	0.19	0.19
Worked as a truck driver - ever	-0.16	-0.07	-0.11
Worked as a truck driver - last year	-0.08	-0.06	-0.05
Worked as a truck driver - last fortnight	-0.05	-0.08	-0.02
Used dyes in hobbies - ever	-0.01	0.01	0.02
Used chemicals in hobbies - ever	0.00	0.04	0.00
Worked with leather in hobbies - ever	-0.04	-0.04	-0.11
Worked with paint in hobbies - ever	0.00	0.12	0.05
Worked with paint in hobbies - last year	-0.04	0.18	0.03
Worked with paint in hobbies - fortnight	-0.06	0.10	-0.05
Other hobbies	-0.09	0.08	0.05
Gardening or farming (recreational)	0.05	0.09	0.07
Use permanent hair dyes - ever	-0.02	0.02	-0.02
Used semi-permanent hair dyes - ever	0.07	0.12	0.14
Used hair rinses - ever	-0.04	0.10	-0.05
Smoke tobacco - ever	-0.07	-0.06	0.00
Smoke tobacco - now	-0.08	-0.02	0.00
Passive smoking	-0.11	-0.02	-0.02
Passive smoking - workplace	-0.05	-0.01	-0.10
<i>During the study period:</i>			
Worked with dyes	-0.05	-0.02	-0.06
Worked with chemicals	0.05	0.12	0.17
Worked with paint	0.04	0.15	0.14
Worked as a truck driver	-0.10	-0.08	-0.13
Used paint in hobby	-0.09	-0.04	-0.10
Other hobbies	-0.05	-0.01	-0.03
Swimming in pool / chlorinated water	0.02	0.01	-0.02
Smoked cigarettes	-0.08	-0.01	0.02
Passive smoking	-0.08	0.02	-0.05
Serum folate level	0.10	0.09	0.07
Serum vitamin B12 level	0.04	0.16	0.16
Age	-0.04	0.26	0.02

## Appendix 7: Correlation coefficients between internal dose of THMs and potentially confounding variables

	Internal dose of			Total THM
	chloroform	bromodichloromethane	bromoform	
Bladder infection prior to last 12 months	-0.04	0.02	-0.05	-0.04
Kidney infection prior to the last 12 months	-0.03	-0.05	0.07	0.03
Family history of bladder cancer	-0.01	0.17	0.12	0.20
Worked with dyes - ever	-0.02	-0.06	-0.04	-0.05
Worked with dyes- last year	-0.06	-0.06	0.01	-0.02
Worked with chemicals - ever	-0.09	-0.05	-0.06	-0.05
Worked with electrical cables or making rubber	-0.04	-0.01	-0.05	-0.04
Worked with leather - ever	-0.01	0.01	-0.04	-0.03
Worked with paint - ever	0.04	-0.03	-0.11	-0.08
Worked with paint - last year	0.04	0.06	-0.07	-0.03
Worked with paint - fortnight	0.06	0.07	-0.05	-0.01
Worked as a truck driver - ever	-0.14	-0.07	-0.10	-0.08
Worked as a truck driver - last year	-0.04	-0.07	-0.06	-0.07
Worked as a truck driver - last fortnight	-0.01	-0.05	-0.05	-0.05
Used dyes in hobbies - ever	0.10	0.12	-0.04	0.07
Used chemicals in hobbies - ever	0.11	0.12	0.08	0.12
Worked with leather in hobbies - ever	-0.01	0.04	-0.08	-0.02
Worked with paint in hobbies - ever	0.08	0.01	0.03	0.01
Worked with paint in hobbies - last year	0.09	0.04	0.05	0.05
Worked with paint in hobbies - fortnight	0.11	0.02	0.00	0.01
Other hobbies	0.17	0.12	0.24	0.26
Gardening or farming (recreational)	0.00	0.26	0.09	0.18

Cont'd



	Internal dose of			
	chloroform	bromodichloromethane	bromoform	total THM
Use permanent hair dyes - ever	-0.01	-0.04	-0.04	-0.04
Used semi-permanent hair dyes - ever	0.02	0.04	0.09	0.08
Used hair rinses - ever	0.02	0.03	0.04	0.04
Smoke tobacco - ever	-0.11	-0.14	-0.10	-0.14
Smoke tobacco - now	-0.02	-0.12	-0.12	-0.14
Passive smoking	-0.07	-0.14	-0.13	-0.16
Passive smoking - workplace	0.01	-0.02	-0.09	-0.07
<i>During the study period:</i>				
Worked with dyes	-0.03	-0.05	-0.04	-0.04
Worked with chemicals	0.12	0.08	0.12	0.13
Worked with paint	0.02	0.06	-0.04	-0.01
Worked as a truck driver	-0.06	-0.09	-0.06	-0.08
Used paint in hobby	-0.08	-0.08	-0.08	-0.09
Other hobbies	0.06	0.06	0.17	0.14
Swimming in pool / chlorinated water	0.00	-0.02	-0.04	-0.04
Smoked cigarettes	-0.08	-0.11	-0.11	-0.12
Passive smoking	-0.02	-0.05	-0.05	-0.05
Serum folate level	0.13	0.10	0.18	0.17
Serum vitamin B12 level	0.01	0.08	0.03	0.04
Age	0.06	0.12	0.14	0.12

## Appendix 8: Relative risks for the associations between the potentially confounding variables and frequency of micronuclei

	n positive / n*	relative risk	95% CI	p value
Bladder infection prior to last 12 months	16/228	0.87	0.50 to 1.49	0.6
Kidney infection prior to the last 12 months	12/228	0.99	0.51 to 1.90	0.9
Family history of bladder cancer	8/226	1.16	0.51 to 2.64	0.7
Worked with dyes - ever	20/228	0.94	0.57 to 1.55	0.8
Worked with dyes- last year	9/228	1.22	0.58 to 2.58	0.6
Worked with fulchisin - ever	6/228	1.26	0.60 to 2.63	0.5
Worked with chemicals - ever	106/228	0.80	0.60 to 1.06	0.1
Worked with electrical cables or making rubber	5/228	0.54	0.18 to 1.58	0.3
Worked with leather - ever	3/228	0.78	0.22 to 2.76	0.7
Worked with paint - ever	38/228	0.61	0.41 to 0.92	0.02
Worked with paint - last year	19/228	0.72	0.42 to 1.22	0.2
Worked with paint - fortnight	12/228	0.70	0.35 to 1.39	0.3
Worked as a truck driver - ever	65/228	1.18	0.88 to 1.59	0.3
Worked as a truck driver - last year	22/228	0.91	0.57 to 1.46	0.7
Worked as a truck driver - last fortnight	18/228	1.09	0.66 to 1.81	0.7
Used dyes in hobbies - ever	16/228	0.99	0.58 to 1.67	1.0
Used chemicals in hobbies - ever	114/228	1.07	0.80 to 1.43	0.7
Worked with leather in hobbies - ever	28/228	1.55	1.08 to 2.24	0.02
Worked with paint in hobbies - ever	190/228	1.02	0.68 to 1.52	0.9
Worked with paint in hobbies - last year	120/228	1.29	0.97 to 1.72	0.1
Worked with paint in hobbies - fortnight	31/228	1.10	0.73 to 1.67	0.6
Other hobbies	72/228	1.27	0.94 to 1.72	0.1
Gardening or farming (recreational)	26/228	1.33	0.74 to 2.38	0.3
Use permanent hair dyes - ever	12/228	1.14	0.64 to 2.05	0.7
Used semi-permanent hair dyes - ever	8/228	1.46	0.64 to 3.31	0.4
Used hair rinses - ever	5/228	0.52	0.10 to 2.58	0.4
Smoke tobacco - ever	151/228	1.15	0.85 to 1.57	0.4
Smoke tobacco - now	53/228	1.04	0.74 to 1.44	0.9
Passive smoking	10/228	0.24	0.14 to 1.14	0.6
Passive smoking - workplace	23/228	1.13	0.72 to 1.78	0.6

Cont'd

	n positive / n*	relative risk	95% CI	p value
<i>During the study period:</i>				
Worked with dyes	5/228	1.23	0.46 to 3.24	0.7
Worked with chemicals	22/228	1.16	0.70 to 1.92	0.6
Worked with paint	10/228	0.60	0.25 to 1.43	0.3
Worked as a truck driver	21/228	1.01	0.63 to 1.63	1.0
Used paint in hobby	26/228	1.39	0.91 to 2.10	0.1
Other hobbies	31/228	1.37	0.94 to 1.99	0.1
Swimming in pool / chlorinated water	16/228	0.88	0.46 to 1.69	0.7
Smoked cigarettes	54/228	1.04	0.75 to 1.45	0.8
Passive smoking	17/228	0.85	0.49 to 1.45	0.5
Serum folate level	208/228	1.00	0.98 to 1.01	0.7
Serum vitamin B12 level	208/228	1.00	0.998 to 1.001	0.8
Age	221/228	1.00	0.98 to 1.02	0.9

\* number of events reported / total number of respondents

## Appendix 9: Relative risks in the assessment of confounding in the association between available dose of chloroform and bromoform, and frequency of micronuclei

Variable	n observations	n participants	Relative risk Chloroform	(% change)	Relative risk Bromoform	(% change)	Relative risk AOX	(% change)
Baseline	605	226	0.985	(0)	0.968	(0)	1.0029	(0)
Bladder infection prior to last 12 months	605	226	0.985	(<1)	0.971	(<1)	1.0028	(<1)
Kidney infection prior to the last 12 months	605	226	0.985	(0)	0.968	(0)	1.0029	(0)
Family history of bladder cancer	605	226	0.985	(<1)	0.970	(<1)	1.0027	(<1)
Worked with dyes - ever	605	226	0.985	(<1)	0.970	(<1)	1.0028	(<1)
Worked with dyes- last year	605	226	0.985	(<1)	0.968	(0)	1.0029	(0)
Worked with fulchisin - ever	605	226	0.985	(<1)	0.969	(<1)	1.0029	(0)
Worked with chemicals - ever	605	226	0.985	(<1)	0.974	(<1)	1.0026	(<1)
Worked with electrical cables or making rubber	601	225	0.986	(<1)	0.973	(<1)	1.0026	(<1)
Worked with leather - ever	601	225	0.985	(<1)	0.968	(0)	1.0029	(0)
Worked with paint - ever	605	226	0.986	(<1)	0.977	(<1)	1.0024	(<1)
Worked with pain - last year	605	226	0.985	(0)	0.973	(<1)	1.0027	(<1)
Worked with paint - fortnight	605	226	0.985	(0)	0.972	(<1)	1.0028	(<1)
Worked as a truck driver – ever	605	226	0.985	(0)	0.965	(<1)	1.0031	(<1)
Worked as a truck driver - last year	605	226	0.985	(<1)	0.969	(<1)	1.0028	(<1)
Worked as a truck driver - last fortnight	605	226	0.984	(<1)	0.966	(<1)	1.0030	(<1)
Used dyes in hobbies - ever	605	226	0.985	(<1)	0.968	(0)	1.0029	(0)
Used chemicals in hobbies - ever	605	226	0.985	(<1)	0.968	(0)	1.0029	(0)
Worked with leather in hobbies – ever	605	226	0.987	(<1)	0.977	(<1)	1.0025	(<1)
Worked with paint in hobbies - ever	605	226	0.985	(0)	0.968	(0)	1.0029	(<1)
Worked with paint in hobbies - last year	603	225	0.985	(0)	0.962	(<1)	1.0030	(<1)
Worked with paint in hobbies – fortnight	603	225	0.984	(<1)	0.966	(<1)	1.0030	(<1)
Other hobbies	605	226	0.984	(<1)	0.963	(<1)	1.0030	(<1)

Cont'd

Variable	n observations	n participants	Relative risk Chloroform	(% change)	Relative risk Bromoform	(% change)	Relative risk AOX	(% change)
Gardening or farming (recreational)	605	226	0.985	(<1)	0.969	(<1)	1.0028	(<1)
Use permanent hair dyes - ever	605	226	0.984	(<1)	0.966	(<1)	1.0030	(<1)
Used semi-permanent hair dyes – ever	605	226	0.985	(<1)	0.969	(<1)	1.0028	(<1)
Used hair rinses - ever	605	226	0.985	(<1)	0.968	(0)	1.0030	(<1)
Smoke tobacco - ever	605	226	0.985	(<1)	0.969	(<1)	1.0028	(<1)
Smoke tobacco - now	605	226	0.985	(0)	0.968	(0)	1.0029	(0)
Passive smoking	605	226	0.984	(<1)	0.967	(<1)	1.0030	(<1)
Passive smoking - workplace	577	217	0.983	(<1)	0.962	(<1)	1.0033	(<1)
<i>During the study period:</i>								
Worked with dyes	605	226	0.985	(<1)	0.968	(0)	1.0029	(0)
Worked with chemicals	605	226	0.985	(0)	0.967	(<1)	1.0029	(0)
Worked with paint	605	226	0.985	(<1)	0.975	(<1)	1.0027	(<1)
Worked as a truck driver	605	226	0.985	(<1)	0.967	(<1)	1.0030	(<1)
Used paint in hobby	605	226	0.985	(<1)	0.965	(<1)	1.0031	(<1)
Other hobbies	605	226	0.985	(0)	0.964	(<1)	1.0030	(<1)
Swimming in pool / chlorinated water	605	226	0.984	(<1)	0.966	(<1)	1.0030	(<1)
Smoked cigarettes	605	226	0.985	(0)	0.968	(0)	1.0029	(<1)
Passive smoking	605	226	0.985	(0)	0.970	(<1)	1.0028	(0)
Serum folate level	605	226	0.987	(<1)	0.972	(<1)	1.0026	(<1)
Serum vitamin B12 level	605	226	0.987	(<1)	0.973	(<1)	1.0026	(<1)
Age	604	225	0.985	(0)	0.969	(<1)	1.0026	(<1)

Notes:

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = available dose for chloroform, bromoform, and AOX (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

**Appendix 10: Relative risks in the assessment of confounding in the association between intake dose of chloroform and bromoform as estimated by fluid intake diary, and frequency of micronuclei**

Variable	n observations	n participants	Relative risk chloroform	(% change)	Relative risk Bromoform	(% change)
Baseline	605	226	1.000	(0)	1.004	(0)
Bladder infection prior to last 12 months	605	226	1.000	(0)	1.005	(<1)
Kidney infection prior to the last 12 months	605	226	1.000	(0)	1.004	(0)
Family history of bladder cancer	605	226	0.999	(<1)	1.004	(0)
Worked with dyes – ever	605	226	1.000	(0)	1.004	(0)
Worked with fulchisin – ever	605	226	1.000	(0)	1.004	(0)
Worked with chemicals – ever	605	226	1.000	(0)	1.004	(0)
Worked with electrical cables or making rubber	601	225	0.999	(<1)	1.004	(0)
Worked with leather – ever	601	225	1.000	(0)	1.004	(0)
Worked with paint – ever	605	226	0.999	(<1)	1.003	(<1)
Worked with paint – last year	605	226	0.999	(0)	1.005	(<1)
Worked with paint – fortnight	605	226	1.000	(0)	1.005	(<1)
Worked as a truck driver – ever	605	226	1.000	(0)	1.005	(<1)
Worked as a truck driver - last year	605	226	1.000	(0)	1.004	(0)
Worked as a truck driver - last fortnight	605	226	1.000	(0)	1.004	(0)
Used dyes in hobbies – ever	605	226	1.000	(0)	1.004	(0)
Used chemicals in hobbies – ever	605	226	1.000	(0)	1.004	(0)
Worked with leather in hobbies – ever	605	226	1.000	(0)	1.007	(<1)
Worked with paint in hobbies – ever	605	226	1.000	(0)	1.004	(0)
Worked with paint in hobbies - last year	603	225	1.000	(0)	1.002	(<1)
Worked with paint in hobbies – fortnight	603	225	1.000	(0)	1.003	(<1)

Cont'd

Variable	n observations	n participants	Relative risk chloroform	(% change)	Relative risk Bromoform	(% change)
Other hobbies	605	226	1.000	(0)	1.002	(<1)
Gardening or farming (recreational)	605	226	0.999	(<1)	1.002	(<1)
Use permanent hair dyes – ever	605	226	1.000	(0)	1.004	(0)
Used semi-permanent hair dyes – ever	605	226	1.000	(0)	1.004	(0)
Used hair rinses - ever	605	226	1.000	(0)	1.006	(<1)
Smoke tobacco - ever	605	226	1.000	(0)	1.004	(0)
Smoke tobacco – now	605	226	1.000	(0)	1.004	(0)
Passive smoking	605	226	1.000	(0)	1.004	(0)
Passive smoking – workplace	577	217	1.000	(0)	1.009	(<1)
<i>During the study period:</i>						
Worked with dyes	605	226	1.000	(0)	1.004	(0)
Worked with chemicals	605	226	1.000	(0)	1.004	(0)
Worked with paint	605	226	1.000	(0)	1.006	(<1)
Worked as a truck driver	605	226	1.000	(0)	1.004	(0)
Used paint in hobby	605	226	1.000	(0)	1.005	(<1)
Other hobbies	605	226	1.000	(0)	1.002	(<1)
Swimming in pool / chlorinated water	605	226	1.000	(0)	1.004	(0)
Smoked cigarettes	605	226	1.000	(0)	1.004	(0)
Passive smoking	605	226	1.000	(0)	1.004	(0)
Serum folate level	605	226	1.000	(0)	1.007	(<1)
Serum vitamin B12 level	605	226	1.000	(0)	1.006	(<1)
Age	604	225	1.000	(0)	1.004	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of chloroform and bromoform (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

**Appendix 11: Relative risks in the assessment of confounding in the association between intake dose of chloroform and bromoform as estimated by questionnaire, and frequency of micronuclei**

Variable	n observations	n participants	Relative risk chloroform	(% change)	Relative risk Bromoform	(% change)
Baseline	605	226	1.000	(0)	1.009	(0)
Bladder infection prior to last 12 months	605	226	1.000	(0)	1.008	(<1)
Kidney infection prior to the last 12 months	605	226	1.000	(0)	1.008	(<1)
Family history of bladder cancer	605	226	1.000	(0)	1.009	(0)
Worked with dyes – ever	605	226	1.000	(0)	1.009	(0)
Worked with dyes- last year	605	226	1.000	(0)	1.008	(<1)
Worked with fulchisin – ever	605	226	1.000	(0)	1.008	(<1)
Worked with chemicals – ever	605	226	1.000	(0)	1.009	(0)
Worked with electrical cables or making rubber	601	225	1.000	(0)	1.009	(0)
Worked with leather – ever	601	225	1.000	(0)	1.009	(0)
Worked with paint – ever	605	226	1.000	(0)	1.012	(<1)
Worked with pain - last year	605	226	1.000	(0)	1.012	(<1)
Worked with paint – fortnight	605	226	1.000	(0)	1.008	(<1)
Worked as a truck driver – ever	605	226	1.000	(0)	1.009	(0)
Worked as a truck driver – last year	605	226	1.000	(0)	1.009	(0)
Worked as a truck driver – last fortnight	605	226	1.000	(0)	1.009	(0)
Used dyes in hobbies – ever	605	226	1.000	(0)	1.009	(0)
Used dyes in hobbies - last year	605	226	1.000	(0)	1.013	(<1)
Used chemicals in hobbies – ever	605	226	1.000	(0)	1.008	(<1)
Worked with leather in hobbies - ever	605	226	1.000	(0)	1.009	(0)
Worked with paint in hobbies – ever	605	226	1.000	(0)	1.009	(0)
Worked with paint in hobbies - last year	603	225	1.000	(0)	1.007	(<1)
Worked with paint in hobbies – fortnight	603	225	1.000	(0)	1.009	(0)

Cont'd



Variable	n observations	N participants	Relative risk chloroform	(% change)	Relative risk Bromoform	(% change)
Other hobbies	605	226	1.000	(0)	1.006	(<1)
Gardening or farming (recreational)	605	226	1.000	(0)	1.009	(0)
Use permanent hair dyes – ever	605	226	1.000	(0)	1.009	(0)
Used semi-permanent hair dyes – ever	605	226	1.000	(0)	1.008	(<1)
Used hair rinses – ever	605	226	1.000	(0)	1.009	(0)
Smoke tobacco – ever	605	226	1.000	(0)	1.008	(<1)
Smoke tobacco - now	605	226	1.000	(0)	1.009	(0)
Passive smoking	605	226	1.000	(0)	1.009	(0)
Passive smoking - workplace	577	217	1.000	(0)	1.000	(<1)
<i>During the study period:</i>						
Worked with dyes	605	226	1.000	(0)	1.009	(0)
Worked with chemicals	605	226	1.000	(0)	1.008	(<1)
Worked with paint	605	226	1.000	(0)	1.012	(<1)
Worked as a truck driver	605	226	1.000	(0)	1.009	(0)
Used paint in hobby	605	226	1.000	(0)	1.010	(<1)
Other hobbies	605	226	1.000	(0)	1.006	(<1)
Swimming in pool / chlorinated water	605	226	1.000	(0)	1.009	(0)
Smoked cigarettes	605	226	1.000	(0)	1.009	(0)
Passive smoking	605	226	1.000	(0)	1.009	(0)
Serum folate level	605	226	1.000	(0)	1.011	(<1)
Serum vitamin B12 level	605	226	1.000	(0)	1.011	(<1)
Age	604	225	1.000	(0)	1.009	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose for chloroform and bromoform (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

**Appendix 12: Relative risks in the assessment of confounding in the association between internal dose of chloroform, bromodichloromethane, and bromoform, and frequency of micronuclei**

	Relative risk chloroform	(% change)	Relative risk bromodichloromethane	(% change)	Relative risk chloroform	(% change)
Baseline	0.43		1.28		1.12	
Bladder infection prior to the last 12	0.43	(0)	1.29	(<1)	1.11	(<1)
Kidney infection prior to the last 12 months	0.43	(0)	1.28	(0)	1.12	(0)
Family history of bladder cancer	0.42	(2.3)	1.32	(3.1)	1.12	(0)
Worked with dyes - ever	0.42	(2.3)	1.27	(<1)	1.12	(0)
Worked with dyes- last year	0.44	(2.3)	1.29	(<1)	1.11	(<1)
Worked with fulchisin - ever	0.44	(2.3)	1.3	(1.6)	1.12	(0)
Worked with chemicals - ever	0.4	(7.0)	1.3	(1.6)	1.11	(<1)
Worked with electrical cables or making	0.43	(0)	1.3	(1.6)	1.07	(4.5)
Worked with leather - ever	0.42	(2.3)	1.28	(0)	1.11	(<1)
Worked with paint - ever	0.51	(18.6)	1.21	(5.5)	1.07	(4.5)
Worked with paint - last year	0.44	(2.3)	1.28	(0)	1.1	(1.8)
Worked with paint - fortnight	0.45	(4.7)	1.23	(3.9)	1.11	(<1)
Worked as a truck driver - ever	0.43	(0)	1.29	(<1)	1.12	(0)
Worked as a truck driver - last year	0.43	(0)	1.28	(0)	1.11	(<1)
Worked as a truck driver - last fortnight	0.43	(0)	1.29	(<1)	1.12	(0)
Used dyes in hobbies - ever	0.43	(0)	1.29	(<1)	1.11	(<1)
Used chemicals in hobbies - ever	0.43	(0)	1.26	(1.6)	1.11	(<1)
Worked with leather in hobbies - ever	0.43	(0)	1.16	(9.4)	1.16	(3.6)
Worked with paint in hobbies - ever	0.42	(2.3)	1.31	(2.3)	1.12	(0)
Worked with paint in hobbies - last year	0.39	(9.3)	1.33	(3.9)	1.11	(<1)
Worked with paint in hobbies - fortnight	0.4	(7.03)	1.28	(0)	1.12	(0)

Cont'd

	Relative risk chloroform	(% change)	Relative risk bromodichloromethane	(% change)	Relative risk chloroform	(% change)
Other hobbies	0.38	(11.6)	1.2	(6.3)	1.08	(3.6)
Gardening or farming (recreational)	0.46	(7.0)	1.19	(7)	1.11	(<1)
Use permanent hair dyes - ever	0.43	(0)	1.28	(0)	1.12	(0)
Used semi-permanent hair dyes - ever	0.44	(2.3)	1.29	(<1)	1.11	(<1)
Used hair rinses - ever	0.43	(0)	1.29	(<1)	1.12	(0)
Smoke tobacco - ever	0.42	(2.3)	1.34	(4.7)	1.13	(<1)
Smoke tobacco - now	0.43	(0)	1.29	(<1)	1.12	(0)
Passive smoking	0.46	(7.0)	1.29	(<1)	1.11	(<1)
Passive smoking - workplace	0.38	(11.6)	1.25	(2.3)	1.13	(<1)

*During the study period:*

Worked with dyes	0.44	(2.3)	1.29	(<1)	1.12	(0)
Worked with chemicals	0.42	(2.3)	1.29	(<1)	1.11	(<1)
Worked with paint	0.45	(4.7)	1.29	(<1)	1.11	(<1)
Worked as a truck driver	0.43	(0)	1.28	(0)	1.12	(0)
Used paint in hobby	0.45	(4.7)	1.29	(<1)	1.11	(<1)
Other hobbies	0.43	(0)	1.27	(<1)	1.09	(2.7)
Swimming in pool / chlorinated water	0.43	(0)	1.28	(0)	1.11	(<1)
Smoked cigarettes	0.44	(2.3)	1.29	(<1)	1.12	(0)
Passive smoking	0.42	(2.3)	1.27	(<1)	1.11	(<1)
Serum folate level	0.45	(4.7)	1.32	(3.1)	1.11	(<1)
Serum vitamin B12 level	0.44	(2.3)	1.32	(3.1)	1.1	(1.8)
Age	0.43	(0)	1.29	(<1)	1.11	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = internal dose of chloroform, bromodichloromethane and bromoform (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.
- Highlighted are variable that change the exposure-outcome association by five percent or more, therefore included as a confounder in the final model

**Appendix 12a: Relative risks in the assessment of confounding in the association between internal dose (excluding outliers) of chloroform, bromodichloromethane, and bromoform, and frequency of micronuclei**

	Relative risk chloroform	(% change)	Relative risk bromodichloromethane	(% change)	Relative risk bromoform	(% change)
Baseline	1.23		1.17		1.17	
Bladder infection prior to the last 12 months	1.2	(2.4)	1.26	(7.8)	1.17	(0)
Kidney infection prior to the last 12 months	1.24	(<1)	1.15	(1.7)	1.18	(<1)
Family history of bladder cancer	1.24	(<1)	1.16	(<1)	1.18	(<1)
Worked with dyes - ever	1.2	(2.4)	1.17	(0)	1.17	(0)
Worked with dyes- last year	1.31	(6.5)	1.18	(<1)	1.17	(0)
Worked with fulchisin - ever	1.29	(4.9)	1.21	(3.4)	1.18	(<1)
Worked with chemicals - ever	1.15	(6.5)	1	(14.5)	1.18	(<1)
Worked with electrical cables or making rubber	0.98	(20.3)	1.37	(17.1)	1.12	(4.3)
Worked with leather - ever	1.17	(4.9)	1.19	(1.7)	1.17	(0)
Worked with paint - ever	1.42	(15.5)	1.02	(12.8)	1.12	(4.3)
Worked with paint - last year	1.34	(8.9)	1.17	(0)	1.15	(1.7)
Worked with paint - fortnight	1.4	(13.8)	1.18	(<1)	1.15	(1.7)
Worked as a truck driver - ever	1.17	(4.9)	1.19	(1.7)	1.18	(<1)
Worked as a truck driver - last year	1.27	(3.3)	1.15	(1.7)	1.17	(0)
Worked as a truck driver - last fortnight	1.17	(4.9)	1.19	(1.7)	1.18	(<1)
Used dyes in hobbies - ever	1.23	(0)	1.17	(0)	1.17	(0)
Used chemicals in hobbies - ever	1.3	(5.7)	1.11	(5.1)	1.17	(0)
Worked with leather in hobbies - ever	1.53	(24.4)	1.31	(11.9)	1.21	(3.4)
Worked with paint in hobbies - ever	1.24	(<1)	1.15	(1.7)	1.17	(0)
Worked with paint in hobbies - last year	1.55	(26)	0.94	(19.7)	1.17	(0)
Worked with paint in hobbies - fortnight	1.22	(<1)	1.09	(6.8)	1.16	(<1)

Cont'd

	Relative risk chloroform	(% change)	Relative risk bromodichloromethane	(% change)	Relative risk bromoform	(% change)
Other hobbies	0.84	(31.7)	1.29	(10.3)	1.13	(3.4)
Gardening or farming (recreational)	1.33	(8.1)	1.12	(4.3)	1.16	(<1)
Use permanent hair dyes - ever	1.21	(1.6)	1.15	(1.17)	1.18	(<1)
Used semi-permanent hair dyes - ever	1.26	(2.4)	1.17	(0)	1.16	(<1)
Used hair rinses - ever	1.23	(0)	1.23	(5.1)	1.18	(<1)
Smoke tobacco - ever	1.02	(17.1)	1.25	(6.8)	1.19	(1.7)
Smoke tobacco - now	1.29	(4.9)	1.2	(2.6)	1.18	(<1)
Passive smoking	1.2	(2.4)	1.23	(5.1)	1.18	(<1)
Passive smoking - workplace	0.93	(24.4)	1.15	(1.7)	1.18	(<1)

*During the study period:*

Worked with dyes	1.28	(4.1)	1.19	(1.7)	1.17	(0)
Worked with chemicals	1.19	(3.3)	1.18	(<1)	1.17	(0)
Worked with paint	1.37	(11.4)	1.22	(4.3)	1.16	(<1)
Worked as a truck driver	1.23	(0)	1.18	(<1)	1.17	(0)
Used paint in hobby	1.37	(11.4)	1.22	(4.3)	1.16	(<1)
Other hobbies	1.44	(17.1)	0.98	(16.2)	1.15	(1.7)
Swimming in pool / chlorinated water	1.25	(1.6)	1.15	(1.7)	1.17	(0)
Smoked cigarettes	1.3	(5.7)	1.19	(1.7)	1.18	(<1)
Passive smoking	1.19	(3.34)	1.18	(<1)	1.17	(0)
Serum folate level	1.4	(13.8)	1.55	(32.5)	1.17	(0)
Serum vitamin B12 level	1.14	(7.3)	1.63	(39.3)	1.16	(<1)
Age	1.23	(0)	1.18	(<1)	1.17	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = internal dose of chloroform, bromodichloromethane and bromoform (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.
- Highlighted are variable that change the exposure-outcome association by five percent or more, therefore included as a confounder in the final model

### Appendix 13: Relative risks in the assessment of confounding in the association between available dose of total THM and frequency of micronuclei

Variable	n observations	n participants	Relative risk total THM	(% change)
Baseline	605	226	1.0002	(0)
Bladder infection prior to last 12 months	605	226	1.0002	(0)
Family history of bladder cancer	605	226	1.0002	(0)
Worked with dyes – ever	605	226	1.0002	(0)
Worked with dyes- last year	605	226	1.0002	(0)
Worked with chemicals – ever	605	226	1.0002	(0)
Worked with electrical cables/making rubber	601	225	1.0000	(<1)
Worked with leather – ever	601	225	1.0002	(0)
Worked with paint - ever	605	226	1.0001	(<1)
Worked with pain - last year	605	226	1.0002	(0)
Worked with paint - fortnight	605	226	1.0002	(0)
Worked as a truck driver - ever	605	226	1.0002	(0)
Worked as a truck driver - last year	605	226	1.0002	(0)
Worked as a truck driver - last fortnight	605	226	1.0002	(0)
Used dyes in hobbies - ever	605	226	1.0002	(0)
Used chemicals in hobbies - ever	605	226	1.0002	(0)
Worked with leather in hobbies – ever	605	226	1.0001	(<1)
Worked with paint in hobbies – ever	605	226	1.0002	(0)
Worked with paint in hobbies - last year	603	225	1.0002	(0)
Worked with paint in hobbies – fortnight	603	225	1.0002	(0)
Other hobbies	605	226	1.0002	(0)
Gardening or farming (recreational)	605	226	1.0002	(0)
Use permanent hair dyes – ever	605	226	1.0002	(0)
Used semi-permanent hair dyes – ever	605	226	1.0002	(0)
Used hair rinses – ever	605	226	1.0002	(0)
Smoke tobacco – ever	605	226	1.0002	(0)
Smoke tobacco – now	605	226	1.0003	(<1)
Passive smoking	603	225	1.0002	(0)
Passive smoking - workplace	577	217	1.0002	(0)
<i>During the study period:</i>				
Worked with dyes	605	226	1.0002	(0)
Worked with chemicals	605	226	1.0002	(0)
Worked with paint	605	226	1.0002	(0)
Worked as a truck driver	605	226	1.0002	(0)
Used paint in hobby	605	226	1.0006	(<1)
Other hobbies	605	226	1.0002	(0)
Swimming in pool / chlorinated water	605	226	1.0002	(0)
Smoked cigarettes	605	226	1.0002	(0)
Passive smoking	605	226	1.0002	(0)
Age	604	225	1.0002	(0)
Serum folate level	556	206	1.0002	(0)
Serum vitamin B12 level	556	206	1.0004	(<1)

- Baseline model = available dose total THM (exposure) and frequency of micronuclei per 1000 normal cells (outcome).
- Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

## Appendix 14: Relative risks in the assessment of confounding in the association between intake dose of total THM as estimated by fluid intake diary, and frequency of micronuclei

Variable	n observations	n participants	Relative risk total THM	(% change)
Baseline	605	226	1.0001	
Bladder infection prior to last 12 months	605	226	1.0002	(<1)
Kidney infection prior to the last 12 months	605	226	1.0001	(0)
Family history of bladder cancer	605	226	1.0001	(0)
Worked with dyes - ever	605	226	1.0001	(0)
Worked with dyes- last year	605	226	1.0002	(<1)
Worked with fulchisin - ever	605	226	1.0001	(0)
Worked with chemicals - ever	605	226	1.0001	(0)
Worked with electrical cables or making rubber	605	226	1.0000	(<1)
Worked with leather - ever	605	226	1.0001	(0)
Worked with paint - ever	605	226	1.0000	(<1)
Worked with paint - last year	605	226	1.0001	(0)
Worked with paint - fortnight	605	226	1.0001	(0)
Worked as a truck driver - ever	605	226	1.0002	(<1)
Worked as a truck driver - last year	605	226	1.0001	(0)
Worked as a truck driver - last fortnight	605	226	1.0002	(<1)
Used dyes in hobbies - ever	605	226	1.0001	(0)
Used chemicals in hobbies - ever	605	226	1.0001	(0)
Worked with leather in hobbies - ever	605	226	1.0004	(<1)
Worked with paint in hobbies - ever	605	226	1.0001	(0)
Worked with paint in hobbies - last year	605	226	1.0001	(0)
Worked with paint in hobbies - fortnight	605	226	1.0001	(0)
Other hobbies	605	226	1.0000	(<1)
Gardening or farming (recreational)	605	226	1.0000	(<1)
Use permanent hair dyes - ever	605	226	1.0001	(0)
Used semi-permanent hair dyes - ever	605	226	1.0001	(0)
Used hair rinses - ever	605	226	1.0003	(<1)
Smoke tobacco - ever	605	226	1.0002	(<1)
Smoke tobacco - now	605	226	1.0001	(0)
Passive smoking	605	226	1.0002	(<1)
Passive smoking - workplace	605	226	1.0005	(<1)
<i>During the study period:</i>				
Worked with dyes	605	226	1.0002	(<1)
Worked with chemicals	605	226	1.0001	(0)
Worked with paint	605	226	1.0002	(<1)
Worked as a truck driver	605	226	1.0001	(0)
Used paint in hobby	605	226	1.0003	(<1)
Other hobbies	605	226	1.0000	(<1)
Swimming in pool / chlorinated water	605	226	1.0001	(0)
Smoked cigarettes	605	226	1.0001	(0)
Passive smoking	605	226	1.0002	(<1)
Serum folate level	605	226	1.0005	(<1)
Serum vitamin B12 level	605	226	1.0003	(<1)
Age	605	226	1.0001	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

## Appendix 15: Relative risks in the assessment of confounding in the association between intake dose of total THM as estimated by questionnaire, and frequency of micronuclei

	n observations	n participants	Relative risk total THM	(% change)
Baseline	605	226	1.0006	
Bladder infection prior to last 12 months	605	226	1.0006	(0)
Kidney infection prior to the last 12 months	605	226	1.0006	(0)
Family history of bladder cancer	605	226	1.0005	(<1)
Worked with dyes - ever	605	226	1.0005	(<1)
Worked with dyes- last year	605	226	1.0006	(0)
Worked with fulchisin - ever	605	226	1.0005	(<1)
Worked with chemicals - ever	605	226	1.0007	(<1)
Worked with electrical cables or making rubber	601	225	1.0005	(<1)
Worked with leather - ever	601	225	1.0005	(<1)
Worked with paint - ever	605	226	1.0007	(<1)
Worked with paint - last year	605	226	1.0007	(<1)
Worked with paint - fortnight	605	226	1.0008	(<1)
Worked as a truck driver - ever	605	226	1.0007	(<1)
Worked as a truck driver - last year	605	226	1.0006	(0)
Worked as a truck driver - last fortnight	605	226	1.0005	(<1)
Used dyes in hobbies - ever	605	226	1.0006	(0)
Used chemicals in hobbies - ever	605	226	1.0005	(<1)
Worked with leather in hobbies - ever	605	226	1.0008	(<1)
Worked with paint in hobbies - ever	605	226	1.0006	(0)
Worked with paint in hobbies - last year	603	225	1.0005	(<1)
Worked with paint in hobbies – fortnight	603	225	1.0005	(<1)
Other hobbies	605	226	1.0004	(<1)
Gardening or farming (recreational)	605	226	1.0005	(<1)
Use permanent hair dyes – ever	605	226	1.0006	(0)
Used semi-permanent hair dyes - ever	605	226	1.0005	(<1)
Used hair rinses – ever	605	226	1.0005	(<1)
Smoke tobacco – ever	605	226	1.0005	(<1)
Smoke tobacco – now	605	226	1.0005	(<1)
Passive smoking	605	226	1.0006	(0)
Passive smoking – workplace	577	217	1.0000	(<1)
<i>During the study period:</i>				
Worked with dyes	605	226	1.0006	(0)
Worked with chemicals	605	226	1.0005	(<1)
Worked with paint	605	226	1.0008	(<1)
Worked as a truck driver	605	226	1.0006	(0)
Used paint in hobby	605	226	1.0008	(<1)
Other hobbies	605	226	1.0005	(<1)
Swimming in pool / chlorinated water	605	226	1.0006	(0)
Smoked cigarettes	605	226	1.0005	(<1)
Passive smoking	605	226	1.0005	(<1)
Serum folate level	605	226	1.0007	(<1)
Serum vitamin B12 level	605	226	1.0007	(<1)
Age	604	225	1.0006	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.



## Appendix 16: Relative risks in the assessment of confounding in the association between internal dose of total THM and frequency of micronuclei

	n observations	n participants	Relative risk total THM	(% change)
Baseline	605	226	1.05	
Bladder infection prior to last 12 months	605	226	1.05	(0)
Kidney infection prior to the last 12 months	605	226	1.05	(0)
Family history of bladder cancer	605	226	1.04	(<1)
Worked with dyes - ever	605	226	1.05	(0)
Worked with dyes- last year	605	226	1.05	(0)
Worked with fulchisin - ever	605	226	1.05	(0)
Worked with chemicals - ever	605	226	1.05	(0)
Worked with electrical cables or making rubber	601	225	1.03	(1.9)
Worked with leather - ever	601	225	1.04	(<1)
Worked with paint - ever	605	226	1.03	(1.9)
Worked with paint - last year	605	226	1.04	(<1)
Worked with paint - fortnight	605	226	1.04	(<1)
Worked as a truck driver - ever	605	226	1.05	(0)
Worked as a truck driver - last year	605	226	1.05	(0)
Worked as a truck driver - last fortnight	605	226	1.05	(0)
Used dyes in hobbies - ever	605	226	1.05	(0)
Used chemicals in hobbies - ever	605	226	1.04	(<1)
Worked with leather in hobbies - ever	605	226	1.04	(<1)
Worked with paint in hobbies - ever	605	226	1.05	(0)
Worked with paint in hobbies - last year	603	225	1.05	(0)
Worked with paint in hobbies - fortnight	603	225	1.04	(<1)
Other hobbies	605	226	1.01	(3.8)
Gardening or farming (recreational)	605	226	1.03	(1.9)
Use permanent hair dyes - ever	605	226	1.05	(0)
Used semi-permanent hair dyes – ever	605	226	1.05	(0)
Used hair rinses – ever	605	226	1.05	(0)
Smoke tobacco – ever	605	226	1.05	(0)
Smoke tobacco – now	605	226	1.05	(0)
Passive smoking	603	225	1.05	(0)
Passive smoking – workplace	577	217	1.05	(0)
<i>During the study period:</i>				
Worked with dyes	605	226	1.05	(0)
Worked with chemicals	605	226	1.04	(0)
Worked with paint	605	226	1.05	(0)
Worked as a truck driver	605	226	1.05	(0)
Used paint in hobby	605	226	1.06	(<1)
Other hobbies	605	226	1.04	(<1)
Swimming in pool / chlorinated water	605	226	1.05	(0)
Smoked cigarettes	605	226	1.05	(0)
Passive smoking	605	226	1.04	(<1)
Serum folate level	556	225	1.05	(0)
Serum vitamin B12 level	556	225	1.05	(0)
Age	604	225	1.05	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = internal dose of total THM (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

## Appendix 16a: Relative risks in the assessment of confounding in the association between internal dose of total THM (excluding outliers) and frequency of micronuclei

	n observations	n participants	Relative risk total THM	(% change)
Baseline	601	220	1.18	
Bladder infection prior to last 12 months	601	220	1.18	(0)
Kidney infection prior to the last 12 months	601	220	1.17	(<1)
Family history of bladder cancer	601	220	1.19	(<1)
Worked with dyes - ever	601	220	1.17	(<1)
Worked with dyes- last year	601	220	1.18	(0)
Worked with fulchisin - ever	601	220	1.19	(<1)
Worked with chemicals - ever	601	220	1.16	(1.17)
Worked with electrical cables or making	597	219	1.13	(4)
Worked with leather - ever	597	219	1.17	(<1)
Worked with paint - ever	601	220	1.14	(3.4)
Worked with paint - last year	601	220	1.17	(<1)
Worked with paint - fortnight	601	220	1.17	(<1)
Worked as a truck driver - ever	601	220	1.20	(1.17)
Worked as a truck driver - last year	601	220	1.17	(<1)
Worked as a truck driver - last fortnight	601	220	1.18	(0)
Used dyes in hobbies - ever	601	220	1.18	(0)
Used chemicals in hobbies - ever	601	220	1.17	(<1)
Worked with leather in hobbies – ever	601	220	1.24	(5.1)
Worked with paint in hobbies – ever	601	220	1.18	(0)
Worked with paint in hobbies - last year	599	219	1.17	(<1)
Worked with paint in hobbies – fortnight	599	219	1.16	(1.17)
Other hobbies	60	220	1.12	(5.1)
Gardening or farming (recreational)	601	220	1.17	(<1)
Use permanent hair dyes - ever	601	220	1.18	(0)
Used semi-permanent hair dyes - ever	601	220	1.17	(<1)
Used hair rinses - ever	601	220	1.19	(<1)
Smoke tobacco - ever	601	220	1.19	(<1)
Smoke tobacco - now	601	220	1.19	(<1)
Passive smoking	569	211	1.18	(0)
Passive smoking – workplace	569	211	1.16	(1.17)
<i>During the study period:</i>				
Worked with dyes	601	220	1.19	(<1)
Worked with chemicals	601	220	1.17	(<1)
Worked with paint	601	220	1.18	(0)
Worked as a truck driver	601	220	1.18	(0)
Used paint in hobby	601	220	1.21	(2.5)
Other hobbies	601	220	1.16	(1.17)
Swimming in pool / chlorinated water	601	220	1.17	(<1)
Smoked cigarettes	601	220	1.19	(<1)
Passive smoking	601	220	1.17	(<1)
Serum folate level	550	201	1.21	(2.5)
Serum vitamin B12 level	550	201	1.20	(1.7)
Age	601	220	1.18	(0)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = internal dose of total THM (exposure), and frequency of micronuclei per 1000 normal cells (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

**Appendix 17: Relative risks in the assessment of confounding in the association between available dose of chloroform and bromoform, and DNA index from flow cytometry**

	Relative risk Chloroform	(% change)	Relative risk Bromoform	(% change)	Relative risk AOX	(% change)
Baseline	0.9996		1.012		1.001	
Bladder infection prior to 12 months	0.9989	(<1)	1.008	(<1)	1.002	(<1)
Kidney infection prior to 12 months	0.9983	(<1)	1.005	(<1)	1.002	(<1)
Family history of bladder cancer	0.9995	(<1)	1.014	(<1)	1.001	(<1)
Ever worked with dyes	0.9985	(<1)	1.008	(<1)	1.002	(<1)
Worked with dyes in the last year	0.9995	(<1)	1.010	(<1)	1.001	(<1)
Ever worked with chemicals	0.9997	(<1)	1.009	(<1)	1.001	(<1)
Ever worked making rubber or electrical cables	0.9991	(<1)	1.011	(<1)	1.001	(<1)
Ever worked with leather	0.9996	(<1)	1.012	(<1)	1.001	(<1)
Ever worked with paint	0.9993	(<1)	1.009	(<1)	1.002	(<1)
Ever worked with paint	0.9993	(<1)	1.009	(<1)	1.002	(<1)
Worked with paint in the last year	0.9986	(<1)	1.004	(<1)	1.002	(<1)
Worked with paint in the last fortnight	0.9988	(<1)	1.008	(<1)	1.002	(<1)
Ever worked as a truck driver	0.9999	(<1)	1.017	(<1)	1.001	(<1)
Worked as a truck driver in the last year	0.9997	(<1)	1.012	(<1)	1.001	(<1)
Worked as a truck driver in the last fortnight	0.9995	(<1)	1.012	(<1)	1.001	(<1)
Ever used dyes in hobbies	0.9985	(<1)	1.006	(<1)	1.002	(<1)
Ever worked with leather as part of a hobby	0.9988	(<1)	1.010	(<1)	1.001	(<1)
Ever used paint in a hobby	0.9995	(<1)	1.009	(<1)	1.001	(<1)
Used paint in a hobby in the last year	1.0000	(<1)	1.012	(<1)	1.001	(<1)

Cont'd

	Relative risk chloroform	(% change)	Relative risk Bromoform	(% change)	Relative risk AOX	(% change)
Used paint in a hobby in the last fortnight	0.9984	(<1)	1.011	(<1)	1.001	(<1)
Ever used permanent hair dyes	1.0002	(<1)	1.017	(<1)	1.001	(<1)
Ever used semi-permanent hair dyes	0.9994	(<1)	1.011	(<1)	1.001	(<1)
Ever used hair rinses	0.9991	(<1)	1.011	(<1)	1.001	(<1)
Ever smoked tobacco	1.0005	(<1)	1.018	(<1)	1.001	(<1)
Passive smoking home	1.0030	(<1)	1.016	(<1)	1.001	(<1)
Passive smoking workplace	1.0001	(<1)	1.015	(<1)	1.001	(<1)
<i>During study period:</i>						
Used dyes at workplace	1.0014	(<1)	1.025	(<1)	1.001	(<1)
Used chemicals in workplace	0.9990	(<1)	1.009	(<1)	1.002	(<1)
Used paint in the workplace	0.9996	(<1)	1.012	(<1)	1.001	(<1)
Worked as a truck driver	0.9996	(<1)	1.013	(<1)	1.001	(<1)
Used paint in a hobby	0.9992	(<1)	1.009	(<1)	1.002	(<1)
Swimming in chlorinated water	0.9982	(<1)	1.004	(<1)	1.002	(<1)
Smoke tobacco	0.9991	(<1)	1.010	(<1)	1.002	(<1)
Passive smoking – home	0.9996	(<1)	1.012	(<1)	1.001	(<1)
Passive smoking – workplace	0.9999	(<1)	1.012	(<1)	1.001	(<1)
Vitamin B12	1.0013	(<1)	1.022	(<1)	1.001	(<1)
Folate	0.9999	(<1)	1.019	(<1)	1.001	(<1)
Age	0.9997	(<1)	1.012	(<1)	1.001	(<1)

Notes:

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = available dose for chloroform, bromoform, and AOX (exposure), and log transformed DNA index (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.

## Appendix 18: Relative risks in the assessment of confounding in the association between intake dose of chloroform and bromoform as estimated by fluid intake diary, and DNA index from flow cytometry

n=112	Relative risk chloroform	(% change)	Relative risk bromoform	(% change)
Baseline	1.0018	(0)	1.01	(0)
Bladder infection prior to 12 months	1.0019	(<1)	1.01	(0)
Kidney infection prior to 12 months	1.0018	(0)	1.01	(0)
Family history of bladder cancer	1.0016	(<1)	1.01	(0)
Ever worked with dyes	1.0019	(<1)	1.00	(<1)
Worked with dyes in the last year	1.0020	(<1)	1.01	(0)
Ever worked with chemicals	1.0021	(<1)	1.00	(<1)
Ever worked making rubber or electrical cables	1.0017	(<1)	1.00	(<1)
Ever worked with leather	1.0018	(0)	1.01	(0)
Ever worked with paint	1.0018	(0)	1.01	(0)
Worked with paint in the last year	1.0017	(<1)	1.00	(<1)
Worked with paint in the last fortnight	1.0016	(<1)	1.00	(<1)
Ever worked as a truck driver	1.0017	(<1)	1.01	(0)
Worked as a truck driver in the last year	1.0018	(0)	1.01	(0)
Worked as a truck driver in the last fortnight	1.0018	(0)	1.01	(0)
Ever worked in an aluminium smelter	1.0019	(<1)	1.01	(0)
Ever used dyes in hobbies	1.0022	(<1)	1.00	(<1)
Used dyes in hobbies in the last year	1.0021	(<1)	1.00	(<1)
Worked with leather as part of a hobby in the last year	1.0015	(<1)	1.00	(<1)
Ever used paint in a hobby	1.0020	(<1)	1.00	(<1)
Used paint in a hobby in the last year	1.0019	(<1)	1.01	(0)
Used paint in a hobby in the last fortnight	1.0018	(0)	1.01	(0)
Ever used permanent hair dyes	1.0018	(0)	1.01	(0)
Used permanent hair dyes in the last year	1.0019	(<1)	1.01	(0)
Ever used semi-permanent hair dyes	1.0015	(<1)	1.01	(0)
Used semi-permanent hair dyes in the last year	1.0015	(<1)	1.01	(0)
Ever used hair rinses	1.0017	(<1)	1.00	(<1)
Ever smoked tobacco	1.0018	(0)	1.01	(0)
Passive smoking home	1.0000	(<1)	1.00	(<1)
Passive smoking workplace	1.0018	(0)	1.00	(<1)
<i>During study period:</i>				
Used dyes at workplace	1.0017	(<1)	1.00	(<1)
Used chemicals in workplace	1.0019	(<1)	1.01	(0)
Used paint in the workplace	1.0015	(<1)	1.00	(<1)
Worked as a truck driver	1.0018	(<1)	1.01	(0)
Used paint in a hobby	1.0019	(<1)	1.00	(<1)
Swimming in chlorinated water	1.0019	(<1)	1.01	(0)
Smoke tobacco	1.0020	(<1)	1.01	(0)
Passive smoking – home	1.0018	(<1)	1.01	(0)
Passive smoking – workplace	1.0018	(0)	1.01	(0)
Vitamin B12	1.0018	(0)	1.01	(0)
Folate	1.0016	(<1)	1.01	(0)
Age	1.0018	(0)	1.00	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of chloroform and bromoform (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

## Appendix 19: Relative risks in the assessment of confounding in the association between intake dose of chloroform and bromoform as estimated by questionnaire, and DNA index from flow cytometry

n=112	relative risk chloroform	(% change)	relative risk bromoform	(% change)
Baseline	1.0002	(0)	0.999	(<1)
Bladder infection prior to 12 months	1.0003	(<1)	0.999	(<1)
Kidney infection prior to 12 months	1.0002	(0)	0.999	(<1)
Family history of bladder cancer	1.0003	(0)	1.000	(<1)
Ever worked with dyes	1.0001	(<1)	0.997	(<1)
Worked with dyes in the last year	1.0003	(0)	0.999	(<1)
Ever worked with chemicals	1.0004	(<1)	0.996	(<1)
Ever worked making rubber or electrical cables	1.0001	(<1)	0.998	(<1)
Ever worked with leather	1.0002	(0)	0.999	(<1)
Ever worked with paint	1.0002	(0)	0.998	(<1)
Worked with paint in the last year	1.0002	(0)	0.998	(<1)
Worked with paint in the last fortnight	1.0001	(<1)	1.000	(<1)
Ever worked as a truck driver	0.9998	(<1)	0.999	(<1)
Worked as a truck driver in the last year	1.0002	(0)	0.999	(<1)
Worked as a truck driver in the last fortnight	1.0002	(0)	0.999	(<1)
Ever worked in an aluminium smelter	1.0003	(0)	0.999	(0)
Ever used dyes in hobbies	1.0002	(<1)	0.995	(<1)
Used dyes in hobbies in the last year	1.0003	(0)	0.998	(<1)
Ever worked with leather as part of a hobby	1.0002	(<1)	0.995	(<1)
Worked with leather as part of a hobby in the last year	1.0000	(<1)	0.997	(<1)
Ever used paint in a hobby	1.0002	(0)	0.998	(<1)
Used paint in a hobby in the last year	1.0002	(0)	1.001	(<1)
Used paint in a hobby in the last fortnight	1.0002	(<1)	0.998	(<1)
Ever used permanent hair dyes	1.0002	(0)	1.000	(<1)
Used permanent hair dyes in the last year	1.0003	(0)	0.998	(<1)
Ever used semipermanent hair dyes	1.0001	(<1)	1.000	(<1)
Used semipermanent hair dyes in the last year	1.0000	(<1)	1.001	(<1)
Ever used hair rinses	1.0003	(<1)	0.999	(0)
Ever smoked tobacco	1.0006	(<1)	0.997	(<1)
Passive smoking home	1.0000	(<1)	1.000	(<1)
Passive smoking workplace	1.0002	(0)	0.998	(<1)
<i>During study period:</i>				
Used dyes at workplace	1.0001	(<1)	0.998	(<1)
Used chemicals in workplace	1.0002	(0)	0.998	(<1)
Used paint in the workplace	1.0000	(<1)	1.000	(<1)
Worked as a truck driver	1.0002	(0)	0.999	(<1)
Used paint in a hobby	1.0003	(<1)	1.000	(<1)
Swimming in chlorinated water	1.0003	(0)	1.003	(<1)
Smoke tobacco	1.0005	(<1)	0.998	(<1)
Passive smoking home	1.0002	(0)	0.999	(<1)
Passive smoking workplace	1.0003	(0)	0.998	(<1)
Vitamin B12	1.0001	(<1)	0.998	(<1)
Folate	1.0001	(<1)	1.000	(<1)
Age	1.0003	(0)	0.995	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of chloroform and bromoform (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

**Appendix 20: Relative risks in the assessment of confounding in the association between internal dose of chloroform, bromodichloromethane, and bromoform, and DNA index from flow cytometry**

	Relative risk chloroform	(% change)	Relative risk Bromodichloro-methane	(% change)	Relative risk Bromoform	(% change)
Baseline	1.04		1.11		1.04	
Bladder infection prior to 12 months	1.05	(1.28)	1.09	(1.70)	1.04	(0.13)
Kidney infection prior to 12 months	1.02	(2.13)	1.07	(4.02)	1.05	(1.01)
Family history of bladder cancer	1.06	(1.79)	1.01	(9.04)	1.03	(0.94)
Ever worked with dyes	1.13	(8.45)	1.08	(2.39)	1.03	(0.77)
Worked with dyes in the last year	1.02	(1.63)	1.10	(1.21)	1.05	(1.30)
Ever worked with chemicals	0.96	(8.13)	1.15	(3.42)	1.04	(0.17)
Ever worked making rubber or electrical cables	1.01	(2.57)	1.08	(2.66)	1.03	(1.21)
Ever worked with leather	1.04	(0.40)	1.11	(0.04)	1.04	(0.44)
Ever worked with paint	1.03	(0.86)	1.12	(0.75)	1.04	(0.18)
Worked with paint in the last year	1.05	(1.12)	1.09	(2.14)	1.05	(0.69)
Worked with paint in the last fortnight	1.04	(0.02)	1.09	(1.89)	1.04	(0.01)
Ever worked as a truck driver	0.98	(5.70)	1.23	(10.91)	1.00	(3.60)
Worked as a truck driver in the last year	1.04	(0.36)	1.11	(0.08)	1.04	(0.39)
Worked as a truck driver in the last fortnight	1.04	(0.42)	1.11	(0.12)	1.04	(0.36)
Ever used dyes in hobbies	1.20	(14.98)	1.33	(19.69)	1.01	(3.36)
Ever worked with leather as part of a hobby	1.02	(1.91)	1.33	(19.72)	0.99	(4.76)
Ever used paint in a hobby	1.01	(2.52)	1.15	(3.91)	1.04	(0.42)
Used paint in a hobby in the last year	1.00	(3.39)	1.13	(1.42)	1.04	(0.38)
Used paint in a hobby in the last fortnight	1.10	(5.65)	1.09	(2.22)	1.02	(2.13)

Cont'd

	Relative risk chloroform	(% change)	Relative risk Bromodichloro- methane	(% change)	Relative risk Bromoform	(% change)
Ever used permanent hair dyes	1.03	(0.93)	1.11	(0.44)	1.03	(0.85)
Ever used semipermanent hair dyes	1.05	(1.42)	1.14	(2.93)	1.02	(1.56)
Ever used hair rinses	1.04	(0.08)	1.09	(1.80)	1.03	(1.03)
Ever smoked tobacco	1.06	(2.37)	1.18	(6.51)	1.05	(0.68)
Passive smoking home	1.00	(3.85)	1.00	(9.91)	1.00	(3.85)
Passive smoking workplace	1.05	(0.82)	1.10	(0.87)	1.03	(0.75)
<b>During study period:</b>						
Used dyes at workplace	1.04	(0.39)	1.09	(1.47)	1.03	(1.01)
Used chemicals in workplace	1.03	(0.52)	1.11	(0.00)	1.05	(1.22)
Used paint in the workplace	1.04	(0.09)	1.10	(1.32)	1.03	(0.52)
Worked as a truck driver	1.04	(0.39)	1.11	(0.29)	1.04	(0.31)
Used paint in a hobby	1.06	(1.57)	1.12	(1.24)	1.04	(0.01)
Swimming in chlorinated water	1.06	(2.38)	1.18	(6.55)	1.05	(1.34)
Smoke tobacco	1.01	(2.80)	1.13	(1.71)	1.05	(0.76)
Passive smoking home	1.04	(0.36)	1.11	(0.07)	1.04	(0.40)
Passive smoking workplace	1.07	(2.49)	1.10	(0.99)	1.03	(1.10)
Vitamin B12	1.09	(4.83)	1.15	(3.31)	1.04	(0.34)
Folate	1.03	(1.40)	1.18	(6.42)	1.02	(2.37)
Age	1.04	(0.10)	1.10	(0.62)	1.03	(0.90)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = internal dose for chloroform, bromodichloromethane, and bromoform (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome.
- Highlighted are variable that change the exposure-outcome association by five percent of more, therefore included as a confounder in the final model



## Appendix 21: Relative risks in the assessment of confounding in the association between available dose of total THM and DNA index from flow cytometry

(n=112)	Relative risk Total THM	(% change)
Baseline	1.004	
Bladder infection prior to 12 months	1.004	(<1)
Kidney infection prior to 12 months	1.004	(<1)
Family history of bladder cancer	1.004	(0)
Ever worked with dyes	1.004	(<1)
Worked with dyes in the last year	1.004	(0)
Ever worked with chemicals	1.004	(<1)
Ever worked making rubber or electrical cables	1.004	(<1)
Ever worked with leather	1.004	(0)
Ever worked with paint	1.004	(<1)
Worked with paint in the last year	1.004	(<1)
Worked with paint in the last fortnight	1.004	(<1)
Ever worked as a truck driver	1.004	(<1)
Worked as a truck driver in the last year	1.004	(<1)
Worked as a truck driver in the last fortnight	1.004	(<1)
Ever used dyes in hobbies	1.004	(<1)
Ever worked with leather as part of a hobby	1.003	(<1)
Ever used paint in a hobby	1.004	(<1)
Used paint in a hobby in the last year	1.004	(<1)
Used paint in a hobby in the last fortnight	1.004	(<1)
Ever used permanent hair dyes	1.004	(<1)
Ever used semipermanent hair dyes	1.004	(0)
Ever used hair rinses	1.004	(<1)
Ever smoked tobacco	1.005	(<1)
Passive smoking home	1.004	(<1)
Passive smoking workplace	1.004	(<1)
<i>During study period:</i>		
Used dyes at workplace	1.005	(<1)
Used chemicals in workplace	1.004	(0)
Used paint in the workplace	1.004	(<1)
Worked as a truck driver	1.004	(<1)
Used paint in a hobby	1.004	(<1)
Swimming in chlorinated water	1.004	(0)
Smoke tobacco	1.004	(<1)
Passive smoking workplace	1.004	(<1)
Vitamin B12	1.004	(0)
Folate	1.004	(<1)
Age	1.004	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

## Appendix 22: Relative risks in the assessment of confounding in the association between intake dose of total THM as estimated by diary, and DNA index from flow cytometry

n=112	Relative risk total THM	(% change)
Baseline	1.0012	
Bladder infection prior to 12 months	1.0013	(0)
Kidney infection prior to 12 months	1.0012	(0)
Family history of bladder cancer	1.0011	(<1)
Ever worked with dyes	1.0012	(0)
Worked with dyes in the last year	1.0013	(<1)
Ever worked with chemicals	1.0012	(0)
Ever worked making rubber or electrical cables	1.0011	(<1)
Ever worked with leather	1.0012	(0)
Ever worked with paint	1.0012	(0)
Worked with paint in the last year	1.0010	(<1)
Worked with paint in the last fortnight	1.0010	(<1)
Ever worked as a truck driver	1.0011	(<1)
Worked as a truck driver in the last year	1.0012	(0)
Worked as a truck driver in the last fortnight	1.0012	(0)
Ever worked in an aluminium smelter	1.0013	(0)
Ever used dyes in hobbies	1.0013	(0)
Used dyes in hobbies in the last year	1.0013	(<1)
Ever worked with leather as part of a hobby	1.0010	(<1)
Worked with leather as part of a hobby in the last	1.0010	(<1)
Ever used paint in a hobby	1.0013	(<1)
Used paint in a hobby in the last year	1.0013	(0)
Used paint in a hobby in the last fortnight	1.0012	(0)
Ever used permanent hair dyes	1.0012	(0)
Used permanent hair dyes in the last year	1.0013	(<1)
Ever used semi-permanent hair dyes	1.0011	(<1)
Used semi-permanent hair dyes in the last year	1.0011	(<1)
Ever used hair rinses	1.0011	(<1)
Ever smoked tobacco	1.0012	(0)
Passive smoking home	1.0012	(0)
Passive smoking workplace	1.0012	(0)
Used dyes at workplace	1.0011	(<1)
Used chemicals in workplace	1.0013	(<1)
Used paint in the workplace	1.0010	(<1)
Worked as a truck driver	1.0012	(0)
Used paint in a hobby	1.0012	(0)
Swimming in chlorinated water	1.0015	(<1)
Smoke tobacco	1.0013	(<1)
Passive smoking - home	1.0012	(0)
Passive smoking - workplace	1.0012	(0)
Vitamin B12	1.0012	(0)
Folate	1.0012	(<1)
Age	1.0011	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

## Appendix 23: Relative risks in the assessment of confounding in the association between intake dose of total THM as estimated by questionnaire, and DNA index from flow cytometry

n=112	Relative risk total THM	% change
Baseline	1.0001	
Bladder infection prior to 12 months	1.0001	(<1)
Kidney infection prior to 12 months	0.9999	(<1)
Family history of bladder cancer	1.0001	(<1)
Ever worked with dyes	0.9999	(<1)
Worked with dyes in the last year	1.0001	(0)
Ever worked with chemicals	1.0001	(0)
Ever worked making rubber or electrical cables	0.9999	(<1)
Ever worked with leather	1.0001	(0)
Ever worked with paint	1.0001	(0)
Worked with paint in the last year	1.0000	(<1)
Worked with paint in the last fortnight	1.0000	(0)
Ever worked as a truck driver	0.9998	(<1)
Worked as a truck driver in the last year	1.0001	(0)
Worked as a truck driver in the last fortnight	1.0001	(0)
Ever worked in an aluminium smelter	1.0001	(0)
Ever used dyes in hobbies	0.9999	(<1)
Used dyes in hobbies in the last year	1.0001	(0)
Ever worked with leather as part of a hobby	0.9999	(<1)
Worked with leather as part of a hobby in the last year	0.9999	(<1)
Ever used paint in a hobby	1.0000	(0)
Used paint in a hobby in the last year	1.0001	(<1)
Used paint in a hobby in the last fortnight	1.0000	(<1)
Ever used permanent hair dyes	1.0001	(0)
Used permanent hair dyes in the last year	1.0000	(0)
Ever used semi-permanent hair dyes	1.0000	(<1)
Used semi-permanent hair dyes in the last year	1.0000	(<1)
Ever used hair rinses	1.0001	(<1)
Ever smoked tobacco	1.0003	(<1)
Passive smoking home	1.0001	(0)
Passive smoking workplace	1.0001	(0)
<i>During study period:</i>		
Used dyes at workplace	1.0000	(<1)
Used chemicals in workplace	1.0000	(0)
Used paint in the workplace	0.9999	(<1)
Worked as a truck driver	1.0001	(0)
Used paint in a hobby	1.0002	(<1)
Swimming in chlorinated water	1.0002	(<1)
Smoke tobacco	1.0002	(<1)
Passive smoking - home	1.0001	(0)
Passive smoking - workplace	1.0001	(0)
Vitamin B12	1.0000	(<1)
Folate	1.0000	(0)
Age	1.0000	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

## Appendix 24: Relative risks in the assessment of confounding in the association between internal dose of total THM and DNA index from flow cytometry

(n=112)	Relative risk (% change) Total THM	
Baseline	1.03	
Interaction term 1 (table 5-1)	1.02	(<1)
Bladder infection prior to 12 months	1.03	(<1)
Kidney infection prior to 12 months	1.03	(<1)
Family history of bladder cancer	1.01	(1.68)
Ever worked with dyes	1.03	(<1)
Worked with dyes in the last year	1.03	(<1)
Ever worked with chemicals	1.03	(<1)
Ever worked making rubber or electrical cables	1.02	(<1)
Ever worked with leather	1.03	(<1)
Ever worked with paint	1.03	(<1)
Worked with paint in the last year	1.03	(<1)
Worked with paint in the last fortnight	1.03	(<1)
Ever worked as a truck driver	1.02	(<1)
Worked as a truck driver in the last year	1.03	(<1)
Worked as a truck driver in the last fortnight	1.03	(<1)
Ever used dyes in hobbies	1.06	(<1)
Ever worked with leather as part of a hobby	1.03	(<1)
Ever used paint in a hobby	1.03	(<1)
Used paint in a hobby in the last year	1.03	(<1)
Used paint in a hobby in the last fortnight	1.02	(<1)
Ever used permanent hair dyes	1.02	(<1)
Ever used semipermanent hair dyes	1.02	(<1)
Ever used hair rinses	1.02	(<1)
Ever smoked tobacco	1.05	(1.94)
Passive smoking home	1.03	(<1)
Passive smoking workplace	1.02	(<1)
<i>During study period:</i>		
Used dyes at workplace	1.02	(<1)
Used chemicals in workplace	1.03	(<1)
Used paint in the workplace	1.03	(<1)
Worked as a truck driver	1.03	(<1)
Used paint in a hobby	1.03	(<1)
Swimming in chlorinated water	1.05	(1.95)
Smoke tobacco	1.03	(<1)
Passive smoking home	1.03	(<1)
Passive smoking workplace	1.02	(<1)
Vitamin B12	1.04	(1.30)
Folate	1.02	(<1)
Age	1.03	(<1)

- Variables with no events or less than five events reported are not listed here. These variables were not tested because the numbers were too small to detect a contribution towards the model
- Baseline model = intake dose of total THM (exposure), and DNA index from flow cytometry (outcome). Each subsequent line represents a multivariate model – i.e. baseline model + listed variable + outcome

## Appendix 25: NCEPH - Environmental Survey 1997

Study Director Dr Geetha Ranmuthugala - 6249 5603 or 019 443 879

# Environmental Health Questionnaire 1 EHQ1

ID Number \_\_\_\_\_

Name \_\_\_\_\_ Telephone \_\_\_\_\_

The Home Visitor was \_\_\_\_\_ on \_\_\_\_\_

Urine 1 Yes No      Urine 1 collection \_\_\_\_\_

Special Notes \_\_\_\_\_

Date EHQ1 Scheduled \_\_\_\_\_

### Contact Log - To be completed for each attempt at the number

#	Date	Start Time	Stop Time	Result	Int.	Comments
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

### Introduction

Good evening, its ...(int name)... here from the Australian National University could I speak to ...(participant)... please.

Hello, ...(participant)... its ...(int name)... here from the Australian National University, how are you today. I'm ringing today to conduct the 1st telephone interview with you. As my colleague ...(HV name).. would have told you when she came to see you, this telephone interview is the 1st thing that we do in the study. Now this interview will take about 18 minutes to go through, may be a bit longer and maybe a bit shorter, it depends. Some of the questions will need you to remember back a bit so its best if we can make sure that you are comfortable and not likely to be interrupted for the next few minutes. Is now a good time to do this interview or would you like me to call back later tonight?

**If necessary,** It is important that we do this interview tonight as we want to move on to the first urine collection and to starting the fluid consumption diary tomorrow.

Now, during this interview I will read out each question to you exactly as it is written and then I'll read out the answer categories for you to choose from. You then choose the answer category which best answers the question and I will record that answer exactly. Take as much time as you like for each question and ask me to repeat things if I am not being clear. It's important that we get exact details on these questions, even ones that may seem unimportant to you so we want you to think carefully about each question.

## PART 1 Medical problems

To begin with, I want to ask you about certain medical conditions and treatment that you may have had in the past.

**Q1.** First, have you had a bladder infection, also known as cystitis, that was diagnosed by a doctor in the last 12 months that is, any time from October last year through to now?


Yes ..... 1  
No ..... 2  
Cannot remember ..... 3

**Q2.** How many times did this occur in the past 12 months, that is since October 1996?

\_\_\_\_\_ No. of times

**Q3.** Can you tell me when you had these bladder infections during the last 12 months, that is which months did they occur? **Tick appropriate boxes. More than one response allowed**

Oct '96 <input type="checkbox"/>	Feb '97 <input type="checkbox"/>	Jun '97 <input type="checkbox"/>
Nov '96 <input type="checkbox"/>	Mar '97 <input type="checkbox"/>	Jul '97 <input type="checkbox"/>
Dec '96 <input type="checkbox"/>	April '97 <input type="checkbox"/>	Aug '97 <input type="checkbox"/>
Jan '97 <input type="checkbox"/>	May '97 <input type="checkbox"/>	Sept '97 <input type="checkbox"/>
		Oct '97 <input type="checkbox"/>

 **Q4.** Prior to the last 12 months, have you ever had a bladder infection that was diagnosed by a doctor?


Yes ..... 1  
No ..... 2    Go to Q7  
Cannot remember ..... 3    Go to Q7

**Q5.** How many times did this occur?

\_\_\_\_\_ No. of times

**Q6.** Can you tell me the year(s) in which you had bladder infections diagnosed by a doctor?

\_\_\_\_\_ list years

 **Q7.** Have you had a kidney infection diagnosed by a doctor in the last 12 months? (that is, from October '96 to October '97)


Yes ..... 1  
No ..... 2    Go to Q10  
Cannot remember ..... 3    Go to Q10

**Q8.** How many times did this occur in the past 12 months, that is since October 1996?

\_\_\_\_\_ No. of times

**Q9.** Can you tell me when you had these kidney infections *during the last 12 months* (that is in which months did they occur)? (Tick appropriate boxes. More than one response allowed) **Tick appropriate boxes. More than one response allowed**

Oct '96 <input type="checkbox"/>	Feb '97 <input type="checkbox"/>	Jun '97 <input type="checkbox"/>
Nov '96 <input type="checkbox"/>	Mar '97 <input type="checkbox"/>	Jul '97 <input type="checkbox"/>
Dec '96 <input type="checkbox"/>	April '97 <input type="checkbox"/>	Aug '97 <input type="checkbox"/>
Jan '97 <input type="checkbox"/>	May '97 <input type="checkbox"/>	Sept '97 <input type="checkbox"/>
		Oct '97 <input type="checkbox"/>

 **Q10.** Prior to the last 12 months, have you *ever* had a kidney infection that was diagnosed by a doctor?


Yes ..... 1  
No ..... 2    **Go to Q13**  
Cannot remember ..... 3    **Go to Q13**

**Q11.** How many times did this occur?

\_\_\_\_\_ No. of times

**Q12.** Can you tell me the year(s) in which you had a kidney infection diagnosed by a doctor?

\_\_\_\_\_ list years

 **Q13.** Have you had a bladder stone diagnosed by a doctor in the last 12 months? that is, since October last year, and here we are interested in bladder stones and not kidney stones?


Yes ..... 1  
No ..... 2    **Go to Q16**  
Cannot remember ..... 3    **Go to Q16**

**Q14.** How many times did this occur in the past 12 months, that is since October 1996?

\_\_\_\_\_ No. of times

Q15. Can you tell me when you had these bladder stones *during the last 12 months*, that is which months did they occur? **Tick appropriate boxes. More than one response allowed**

Oct '96 ☐    Feb '97 ☐    Jun '97 ☐  
 Nov '96 ☐    Mar '97 ☐    Jul '97 ☐  
 Dec '96 ☐    April '97 ☐    Aug '97 ☐  
 Jan '97 ☐    May '97 ☐    Sept '97 ☐  
    Oct '97 ☐


 **Q16.** Prior to the last 12 months, have you *ever* had a bladder stone diagnosed by a doctor?

Yes ..... 1  
 No ..... 2    **Go to Q19**  
 Cannot remember .... 3    **Go to Q19**

Q17. How many times did this occur?  
    **No. of times**

Q18. Can you tell me the year(s) in which you had a bladder stone confirmed by a doctor?

\_\_\_\_\_ **list years**

 **Q19.** Have you had radiation treatment in the last 12 months, that is, since October last year?

Yes ..... 1  
 No ..... 2    **Go to Q24**  
 Cannot remember .... 3    **Go to Q24**

Q20. How many times did you receive radiation treatment in the past 12 months, that is since October 1996?

\_\_\_\_\_ **No. of times**

Q21. On these occasions did you receive radiation treatment?

to your head and or neck.....	Yes	No
to your chest .....	Yes	No
to your abdomen .....	Yes	No
to your pelvis .....	Yes	No
to your upper limbs .....	Yes	No
to your lower limbs .....	Yes	No
to some other part of your body	Yes	No


What part was that?

Q22. What was the approximate date of the last treatment?

\_\_\_\_\_/\_\_\_\_\_/19\_\_\_\_\_  
**(dd/mm/yy)**

Q23. What was the reason or the diagnosis that led to the radiation treatment?

\_\_\_\_\_  
 \_\_\_\_\_

 **Q24.** Prior to the last 12 months, have you *ever* had radiation treatment?

Yes ..... 1  
 No ..... 2    **Go to Q29**  
 Cannot remember .... 3    **Go to Q29**

Q25. How many times did you receive radiation treatment before the last 12 months, that is apart from any treatment that you may have had in the last 12 months? **Time frame is all time prior to last 12 months.**

\_\_\_\_\_ **No. of times**

Q26. On those occasions did you receive radiation treatment? **Time frame is all time prior to last 12 months.**

to your head and or neck .....	Yes	No
to your chest .....	Yes	No
to your abdomen .....	Yes	No
to your pelvis .....	Yes	No
to your upper limbs .....	Yes	No
to your lower limbs .....	Yes	No
to some other part of your body .....	Yes	No


What part was that?

Q27. What was the approximate date of the last treatment? **Time frame is all time prior to last 12 months.**

\_\_\_\_\_/\_\_\_\_\_/19\_\_\_\_\_  
**(dd/mm/yy)**

Q28. What was the reason or the diagnosis that led to the radiation treatment? **Time frame is all time prior to last 12 months**

\_\_\_\_\_  
 \_\_\_\_\_

 **Q30a.** Have either of your parents ever been diagnosed as having bladder cancer?

Yes ..... 1

No ..... 2

30b. What about any of your brothers or sisters?

Yes ..... 1

No ..... 2

30c. Any of your children, have they ever been diagnosed as having bladder cancer?

Yes ..... 1

No ..... 2

30d. Any of your grandparents?

Yes ..... 1

No ..... 2

30e. What about your aunts or uncles that is blood aunts or uncles, brothers or sisters to your parents?

Yes ..... 1

No ..... 2

30f. What about their children, your first cousins, have any of them ever been diagnosed as having bladder cancer?

Yes ..... 1

No ..... 2

30g. Any other close family members, have any of them ever been diagnosed as having bladder cancer?


Yes ..... 1

No ..... 2

30h. Who was that?

## **PART 2 Job History**

Next I'd like to discuss jobs, either full-time or part-time occupations that you may have worked in at any time during your life from when you first started working right up to and including now.

 **Q300.** Firstly, have you ever had a job where you used or made dyes?

Yes ..... 1

No ..... 2 **Go to Q313**

Don't know not aware...3 **Go to Q313**

Cannot remember .....4 **Go to Q313**

Q301. What dyes were you or are you working with?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

Q302. In how many separate years would you have worked with dyes throughout your life ?

\_\_\_\_\_ **No. of years**

Q303. During that time did you make or use them, every day, every week, every month or less often?

Daily ..... 1 **Goto 304a**

Weekly.....2 **Goto 304b**

Monthly ...3 **Goto 304c**

Less often 4 **Goto 304d**

304a. On average how many hrs per day did you make or use them?

\_\_\_\_\_ **hrs per day**

304b. On average how many hrs per week did you make or use them?


\_\_\_\_\_ **hrs per week**

304c. On average how many hrs per month did you make or use them?

\_\_\_\_\_ **hrs per month**

304d. On average how many hrs per year did you make or use them?

\_\_\_\_\_ **hrs per year**

 **Q305.** You have told me about your lifetime contact with dyes. Now I would like to ask you specifically about the last 12 months. Have you worked with dyes, that is making or using dyes in the past 12 months?

Yes ..... 1 **Go to Q310**

No ..... 2 **Go to Q310**

Don't know not aware3 **Go to Q310**

Cannot remember .....4 **Go to Q310**



Q306. In the last 12 months did you make or use dyes, every day, every week, every month or less often?

Daily .....1 Goto 307a

Weekly.....2 Goto 307b

Monthly ...3 Goto 307c

Less often.4 Goto 307d

307a. On average how many hrs per day did you make or use dyes?

\_\_\_\_\_ hrs per day

307b. On average how many hrs per week did you make or use dyes?

\_\_\_\_\_ hrs per week

307c. On average how many hrs per month did you make or use dyes?

\_\_\_\_\_ hrs per month

307d. On average how many hrs per year did you make or use dyes?

\_\_\_\_\_ hrs per year

Q308. Now I would like to know if you have had contact with dyes specifically in the last two week period. Have you made or used dyes in the last 2 weeks?

Yes .....1

No.....2 **Go to Q310**

Q309. How many hours in total did you spend using or making dyes in the last two weeks?

\_\_\_\_\_ total no. of hours

Q310. When was the last time you made or used dyes, please tell me the month and the year?

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q311. Can you tell me the year in which you first used or made dyes?

19 \_\_\_\_\_

Q312. Have you ever worked with any of the following dyes used in dye industries?

a. Benzedine?

Yes .....1

No.....2 **Go to Q312b**

Don't know not aware..3 **Go to Q312b**

a2. In how many separate years have you been making or using this dye?

\_\_\_\_\_ No. of years

a3. One average, have you been using this dye: daily weekly, monthly or less often?

Daily ..... 1

Weekly..... 2

Monthly ..... 3

Less often ..... 4

b. 2-naphthylamine?

Yes ..... 1

No .....2 **Go to Q312c**

Don't know .....3 **Go to Q312c**

b2. In how many separate years have you been making or using this dye?

\_\_\_\_\_ No. of years

a3. One average, have you been using this dye: daily weekly, monthly or less often?

Daily ..... 1

Weekly..... 2

Monthly ..... 3

Less often ..... 4

c. Fuchsin?

Yes ..... 1

No .....2 **Go to Q312d**

Don't know not aware .3 **Go to Q312d**

c2. In how many separate years have you been making or using this dye?

\_\_\_\_\_ No. of years

a3. One average, have you been using this dye: daily weekly, monthly or less often?

Daily ..... 1

Weekly..... 2

Monthly ..... 3

Less often ..... 4

d. Safranin T

Yes ..... 1

No .....2 **Go to Q313**

Don't know not aware .3 **Go to Q313**

d2. In how many separate years have you been making or using this dye?

\_\_\_\_\_ No. of years

a3. On average, have you been using this dye: daily weekly, monthly or less often?

Daily ..... 1

Weekly ..... 2

Monthly ..... 3

Less often..... 4

**Q313. Have you ever worked as a fisherman?**

Yes ..... 1

No..... 2 **Goto Q325**

**Q314. Did you use bronze dyes to stain bait?**

Yes ..... 1

No..... 2 **Goto Q325**

**Q315. In how many years did you work with bronze dyes to stain bait, throughout your lifetime?**

\_\_\_\_\_ **No. of years**

**Q316. During that time, did you work with bronze dyes daily weekly, monthly or less often?**

Daily ..... 1 **Goto 317a**

Weekly..... 2 **Goto 317b**

Monthly ... 3 **Goto 317c**

Less often. 4 **Goto 317d**

**Q317a. On average how many hrs per day did you work with bronze dyes?**

\_\_\_\_\_ **hrs per day**

**Q317b. On average how many hrs per week did you work with bronze dyes?**

\_\_\_\_\_ **hrs per week**

**Q317c. On average how many hrs per month did you work with bronze dyes?**

\_\_\_\_\_ **hrs per month**

**Q317d. On average how many hrs per year did you work with bronze dyes?**

\_\_\_\_\_ **hrs per year**

**Q318. You have told me about your lifetime contact with bronze dyes used to stain bait. Now I would like to ask you specifically about the last 12 months. Have you worked with bronze dyes to stain bait in the past 12 months ie since November '96?**

Yes ..... 1

No ..... 2 **Go to Q323**

Don't know ..... 3 **Go to Q323**

Cannot remember..... 4 **Go to Q323**

**Q319. In the last 12 months, that is since November 1996, did you work with bronze dyes daily weekly, monthly or less often?**

Daily ..... 1 **Goto 320a**

Weekly..... 2 **Goto 320b**

Monthly ... 3 **Goto 320c**

Less often.. 4 **Goto 320d**

**Q320a. Again, in the last 12 months, on average how many hrs per day did you work with bronze dyes?**

\_\_\_\_\_ **hrs per day**

**Q320b. Again, in the last 12 months, on average how many hrs per week did you work with bronze dyes?**

\_\_\_\_\_ **hrs per week**

**Q320c. Again, in the last 12 months, on average how many hrs per month did you work with bronze dyes?**

\_\_\_\_\_ **hrs per month**

**Q320d. Again, in the last 12 months, on average how many hrs per year did you work with bronze dyes?**

\_\_\_\_\_ **hrs per year**

**Q321. Now I would like to know if you have been working with bronze dyes specifically in the last two week period. Have you been working with bronze dyes in the last 2 weeks?**

Yes ..... 1

No ..... 2 **Go to Q323**

**Q322. How many hours in total did you spend working with bronze dyes in the last two weeks?**

\_\_\_\_\_ **total no. of hours**

**Q323. When was the last time you worked with bronze dyes? Please tell me the month and year.**

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

**Q324. Can you tell me the year in which you first worked with bronze dyes?**

19\_\_\_\_\_

**Q325. Have you ever worked making or using chemicals?**

- Yes .....1  
No.....2 **Go to Q328**  
Don't know .....3 **Go to Q328**  
Cannot remember.....4 **Go to Q328**

Q326. Were you making chemicals, handling chemicals or involved in some other way

- Making chemicals ..... 1  
Handling chemicals..... 2  
Involved in some other way .. 3

Q327. Can you list these chemicals in the blue sheet titled "List of Chemicals" that was given to you by our Explanatory Visitor. Do you recall getting this sheet?

- Yes .....1 **Go to Q328**  
No.....2

Can you please check you package and let me know. We will send you one in the mail. Please return the completed sheet with the diary and the residential sheet when we collect Urine 2. We may need to speak to you about these chemicals in more detail at a later date.

**Q328. Have you ever worked making rubber or making electrical cables? This does not include making goods out of already made rubber?**

- Yes .....1  
No.....2 **Go to Q339**

Q329. In how many separate years were you working making rubber or making electrical cables, throughout your lifetime?

\_\_\_\_\_ **No. of years**

Q330. During that time, did you make rubber or make electrical cables: daily; weekly; monthly; or less often?

- Daily .....1 Goto 331a  
Weekly.....2 Goto 331b  
Monthly ...3 Goto 331c  
Less often.4 Goto 331d

Q331a. On average how many hrs per day did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per day**

Q331b. On average how many hrs per week did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per week**

Q331c. On average how many hrs per month did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per month**

Q331d. On average how many hrs per year did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per year**

Q332. You have told me about your lifetime history of making rubber or making electrical cables. Now I would like to ask you specifically about the last 12 months. Have you been making rubber or making electrical cables in the past 12 months ie since November '96?

- Yes ..... 1  
No .....2 **Go to Q337**

Q333. In the last 12 months, that is since November 1996, did you work making rubber or making electrical cables: daily; weekly; monthly; or less often?

- Daily .....1 Goto 334a  
Weekly.....2 Goto 334b  
Monthly ...3 Goto 334c  
Less often 4 Goto 334d

Q334a. Again, in the last 12 months, on average how many hrs per day did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per day**

Q334b. Again, in the last 12 months, on average how many hrs per week did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per week**

Q334c. Again, in the last 12 months, on average how many hrs per month did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per month**

Q334d. Again, in the last 12 months, on average how many hrs per year did you work making rubber or making electrical cables?

\_\_\_\_\_ **hrs per year**

Q335. Now I would like to know if you have been making rubber or making

electrical cables specifically in the last two week period. Have you been making rubber or making electrical cables in the last 2 weeks?

Yes .....1

No.....2 **Go to Q337**

Q336. How many hours in total did you spend making rubber or making electrical cables in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q337. When was the last time you worked making rubber or making electrical cables? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q324. Can you tell me the year in which you first started making rubber or making electrical cables?

19\_\_\_\_\_

**Q339. Have you ever worked as a leather worker? This includes making, cutting, finishing leather goods, shoe making or shoe repairing?**

Yes .....1

No.....2 **Go to Q350**

Q339a. Were you (read out the following options)

making leather ..... 1

cutting leather ..... 2

finishing leather goods ..... 3

a shoe maker ..... 4

a shoe repairer ..... 5

involved in another activity of leather work (specify ..... )..... 6

Q340. In how many separate years did you work as a leather worker, throughout your lifetime?

\_\_\_\_\_ **No. of years**

Q341. During that time, did you work with leather: daily; weekly; monthly; or less often?

Daily .....1 **Goto 342a**

Weekly.....2 **Goto 342b**

Monthly ...3 **Goto 342c**

Less often.4 **Goto 342d**

Q342a. On average how many hrs per day did you work with leather?

\_\_\_\_\_ **hrs per day**

Q342b. On average how many hrs per week did you work with leather?

\_\_\_\_\_ **hrs per week**

Q342c. On average how many hrs per month did you work with leather?

\_\_\_\_\_ **hrs per month**

Q342d. On average how many hrs per year did you work with leather?

\_\_\_\_\_ **hrs per year**

Q343. You have told me about your lifetime history of leather work. Now I would like to ask you specifically about the last 12 months. Have you worked with leather in the past 12 months ie since November '96?

Yes .....1

No .....2 **Go to Q348**

Q344. In the last 12 months, that is since November 1996, did you work with leather: daily; weekly; monthly; or less often?

Daily .....1 **Goto 345a**

Weekly.....2 **Goto 345b**

Monthly ...3 **Goto 345c**

Less often 4 **Goto 345d**

Q345a. Again, in the last 12 months, on average how many hrs per day did you work with leather?

\_\_\_\_\_ **hrs per day**

Q345b. Again, in the last 12 months, on average how many hrs per week did you work with leather?

\_\_\_\_\_ **hrs per week**

Q345c. Again, in the last 12 months, on average how many hrs per month did you work with leather?

\_\_\_\_\_ **hrs per month**

Q345d. Again, in the last 12 months, on average how many hrs per year did you work with leather?

\_\_\_\_\_ **hrs per year**

Q346. Now I would like to know if you have been working with leather specifically in the last two week period. Have you been working with leather in the last 2 weeks?

Yes .....1

No.....2 **Go to Q348**

Q347. How many hours in total did you spend working with leather in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q348. When was the last time you worked with leather? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q349. Can you tell me the year in which you first worked with leather?

19\_\_\_\_\_

**Q350. Have you ever worked as a painter or in a job that regularly involved painting?**

Yes .....1

No.....2 **Go to Q362**

Q351. What types of paint did you use?

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Q352. In how many separate years did you work as a painter, throughout your lifetime?

\_\_\_\_\_ **No. of years**

Q353. During that time, did you work as a painter: daily; weekly; monthly; or less often?

Daily .....1 Goto 354a

Weekly.....2 Goto 354b

Monthly ...3 Goto 354c

Less often.4 Goto 354d

Q354a. On average how many hrs per day did you work with paint?

\_\_\_\_\_ **hrs per day**

Q354b. On average how many hrs per week did you work with paint?

\_\_\_\_\_ **hrs per week**

Q354c. On average how many hrs per month did you work with paint?

\_\_\_\_\_ **hrs per month**

Q354d. On average how many hrs per year did you work with paint?

\_\_\_\_\_ **hrs per year**

Q355. You have told me about your lifetime contact with paint. Now I would like to ask you specifically about the last 12 months. Have you worked with paint in the past 12 months ie since November '96?

Yes .....1

No .....2 **Go to Q360**

Q356. In the last 12 months, that is since November 1996, did you work with paint: daily; weekly; monthly; or less often?

Daily .....1 Goto 357a

Weekly.....2 Goto 357b

Monthly ...3 Goto 357c

Less often 4 Goto 357d

Q357a. Again, in the last 12 months, on average how many hrs per day did you work with paint?

\_\_\_\_\_ **hrs per day**

Q357b. Again, in the last 12 months, on average how many hrs per week did you work with paint?

\_\_\_\_\_ **hrs per week**

Q357c. Again, in the last 12 months, on average how many hrs per month did you work with paint?

\_\_\_\_\_ **hrs per month**

Q357d. Again, in the last 12 months, on average how many hrs per year did you work with paint?

\_\_\_\_\_ **hrs per year**

Q358. Now I would like to ask you specifically about the last two week period. Have you been working with paint in the last 2 weeks?

Yes .....1

No .....2 **Go to Q360**

Q359. How many hours in total did you spend working with paint in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q360. When was the last time you worked with paint? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q361. Can you tell me the year in which you first worked with paint?

19\_\_\_\_\_

**Q362. Have you ever worked as a truck driver. This includes long distance or around town truck driving?**

Yes .....1

No.....2 **Go to Q373**

Q363. In how many separate years did you work as a truck driver, throughout your lifetime?

\_\_\_\_\_ **No. of years**

Q364. During that time, did you drive trucks: daily; weekly; monthly; or less often?

Daily .....1 Goto 365a

Weekly.....2 Goto 365b

Monthly ...3 Goto 365c

Less often.4 Goto 365d

Q365a. On average how many hrs per day did you drive trucks?

\_\_\_\_\_ **hrs per day**

Q365b. On average how many hrs per week did you drive trucks?

\_\_\_\_\_ **hrs per week**

Q365c. On average how many hrs per month did you drive trucks?

\_\_\_\_\_ **hrs per month**

Q365d. On average how many hrs per year did you drive trucks?

\_\_\_\_\_ **hrs per year**

Q366. You have told me about your lifetime history of your work as a truck driver. Now I would like to ask you specifically about the last 12 months. Have you worked as a truck driver in the past 12 months ie since November '96?

Yes .....1

No.....2 **Go to Q371**

Q367. In the last 12 months, that is since November 1996, did you drive trucks: daily; weekly; monthly; or less often?

Daily .....1 Goto 368a

Weekly.....2 Goto 368b

Monthly ...3 Goto 368c

Less often 4 Goto 368d

Q368a. Again, in the last 12 months, on average how many hrs per day did you drive trucks?

\_\_\_\_\_ **hrs per day**

Q368b. Again, in the last 12 months, on average how many hrs per week did you drive trucks?

\_\_\_\_\_ **hrs per week**

Q368c. Again, in the last 12 months, on average how many hrs per month did you drive trucks?

\_\_\_\_\_ **hrs per month**

Q368d. Again, in the last 12 months, on average how many hrs per year did you work as a truck driver?

\_\_\_\_\_ **hrs per year**

Q369. Now I would like to ask you specifically about the last two week period. Have you been working as a truck driver in the last 2 weeks?

Yes .....1

No .....2 **Go to Q371**

Q370. How many hours in total did you spend working driving trucks in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q371. When was the last time you worked as a truck driver? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q372. Can you tell me the year in which you first as a truck driver?

19\_\_\_\_\_

**Q373. Have you ever worked in an aluminium smelter? This does include working in the offices of an aluminium smelter.**

Yes .....1

No .....2 **Go to Q384**

Q374. In how many separate years did you work in an aluminium smelter, throughout your lifetime?

\_\_\_\_\_ **No. of years**

Q375. During that time, did you work in an aluminium smelter: daily; weekly; monthly; or less often?

Daily .....1 Goto 376a

Weekly.....2 Goto 376b

Monthly ...3 Goto 376c

Less often.4 Goto 376d

Q376a. On average how many hrs per day did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per day**

Q376b. On average how many hrs per week did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per week**

Q376c. On average how many hrs per month did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per month**

Q376d. On average how many hrs per year did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per year**

Q377. You have told me about your lifetime work in an aluminium smelter. Now I would like to ask you specifically about the last 12 months. Have you worked in an aluminium smelter in the past 12 months ie since November '96?

Yes .....1

No.....2 **Go to Q382**

Q378. In the last 12 months, that is since November 1996, did you work in an aluminium smelter: daily; weekly; monthly; or less often?

Daily .....1 Goto 379a

Weekly.....2 Goto 379b

Monthly ...3 Goto 379c

Less often.4 Goto 379d

Q379a. Again, in the last 12 months, on average how many hrs per day did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per day**

Q379b. Again, in the last 12 months, on average how many hrs per week did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per week**

Q379c. Again, in the last 12 months, on average how many hrs per month did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per month**

Q379d. Again, in the last 12 months, on average how many hrs per year did you work in an aluminium smelter?

\_\_\_\_\_ **hrs per year**

Q380. Now I would like to know if you have been working in an aluminium smelter specifically in the last two week period. Have you been working in an aluminium smelter in the last 2 weeks?

Yes .....1

No .....2 **Go to Q382**

Q381. How many hours in total did you spend working in an aluminium smelter in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q382. When was the last time you worked in an aluminium smelter? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q383. Can you tell me the year in which you first started working in an aluminium smelter?

19\_\_\_\_\_

### **Hobbies**

**Q384. Next I would like to ask you about certain hobbies, past-times, work around the house, or any other non-work related activities that you may have been involved in. Have you ever made or used dyes, including the use of dyes in hairdressing, in any of you hobbies?**

Yes .....1

No .....2 **Go to Q395**

Q384a. What were these dyes?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

Q385. In how many separate years did you use dyes in this hobby?

\_\_\_\_\_ **No. of years**

Q386. During that time did you use dyes as part of this hobby: every day; every week; every month; or less often?

Daily .....1 Goto 387a

Weekly.....2 Goto 387b

Monthly ...3 Goto 387c

Less often.4 Goto 387d

387a. On average how many hrs per day did you use dyes as part of your hobby?

\_\_\_\_\_ **hrs per day**

387b. On average how many hrs per week did you use dyes as part of your hobby?


\_\_\_\_\_ **hrs per week**

387c. On average how many hrs per month did you use dyes as part of your hobby?

\_\_\_\_\_ **hrs per month**

387d. On average how many hrs per year did you use dyes as part of your hobby?

\_\_\_\_\_ **hrs per year**

 **Q388.** You have told me about your lifetime contact with dyes as part of your hobby. Now I would like to ask you specifically about the last 12 months. Have you been using dyes as part of your hobby in the past 12 months ie since November '96?

Yes ..... 1

No ..... 2 **Go to Q393**

Q389. In the last 12 months, that is since November 1996, did you make or use dyes as part of your hobby: every day; every week; every month; or less often?

Daily .....1 Goto 390a

Weekly.....2 Goto 390b

Monthly ...3 Goto 390c

Less often.4 Goto 390d

390a. On average how many hrs per day did you make or use dyes as part of your hobby?

\_\_\_\_\_ **hrs per day**

390b. On average how many hrs per week did you make or use dyes as part of your hobby?

\_\_\_\_\_ **hrs per week**

390c. On average how many hrs per month did you make or use dyes as part of your hobby?

\_\_\_\_\_ **hrs per month**

390d. On average how many hrs per year did you make or use dyes as part of your hobby?

\_\_\_\_\_ **hrs per year**

Q391. Now I would like to ask you specifically about the last two weeks. Have you been using dyes as part of your hobby in the last two weeks.

Yes ..... 1

No ..... 2 **Go to Q393**

Q392. How many hours in total did you spend using dyes as part of your hobby in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q393. When was the last time that you used dyes as part of your hobby? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q394. Can you tell me the year in which you first used dyes as part of your hobby?

19\_\_\_\_\_

Q394a. Have you used any of the following dyes in any of your hobbies?

a. Benzedine?

Yes ..... 1

No ..... 2

Don't know not aware .3

b. 2-naphthylamine?

Yes ..... 1

No ..... 2

Don't know not aware .3

c. Fuchsin?

Yes ..... 1

No ..... 2

Don't know not aware .3

d. Safranin T

Yes ..... 1

No ..... 2

Don't know not aware .3



**Q100. Have you ever been fishing, as a hobby, using bronze dyes to stain bait?**

Yes .....1  
No.....2 **Go to Q406**

Q396. In how many separate years have you been fishing using bronze dyes to stain bait?

\_\_\_\_\_ **No. of years**

Q397. During that time, did you use bronze dyes to stain bait: daily; weekly; monthly; or less often?

Daily .....1 **Goto 398a**

Weekly.....2 **Goto 398b**

Monthly ...3 **Goto 398c**

Less often.4 **Goto 398d**

Q398a. On average how many hrs per day did you use bronze dyes to stain bait?

\_\_\_\_\_ **hrs per day**

Q398b. On average how many hrs per week did you use bronze dyes to stain bait?

\_\_\_\_\_ **hrs per week**

Q398c. On average how many hrs per month did you use bronze dyes to stain bait?

\_\_\_\_\_ **hrs per month**

Q398d. On average how many hrs per year did you use bronze dyes to stain bait?

\_\_\_\_\_ **hrs per year**

Q399. You have told me about your lifetime use of bronze dyes as part of your hobby. Now I would like to ask you specifically about the last 12 months. Have you been using bronze dyes to stain bait as part of your hobby in the past 12 months ie since November '96?

Yes .....1  
No.....2 **Go to Q404**

Q400. In the last 12 months, that is since November 1996, did you use bronze dyes to stain bait as part of your hobby: daily; weekly; monthly; or less often?

Daily .....1 **Goto 401a**

Weekly.....2 **Goto 401b**

Monthly ...3 **Goto 401c**

Less often.4 **Goto 401d**

Q401a. Again, in the last 12 months, on average how many hrs per day did you use

bronze dyes to stain bait as part of your hobby?

\_\_\_\_\_ **hrs per day**

Q401b. Again, in the last 12 months, on average how many hrs per week did you use bronze dyes to stain bait as part of your hobby?

\_\_\_\_\_ **hrs per week**

Q401c. Again, in the last 12 months, on average how many hrs per month did you use bronze dyes to stain bait as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q401d. Again, in the last 12 months, on average how many hrs per year did you use bronze dyes to stain bait as part of your hobby?

\_\_\_\_\_ **hrs per year**

Q402. Now I would like to ask you specifically about the last two weeks. Have you been using bronze dyes to stain bait as part of your hobby, in the last two weeks.?

Yes .....1  
No .....2 **Go to Q404**

Q403. How many hours in total did you spend using bronze dyes to stain bait as part of your hobby in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q404. When was the last time that you used bronze dyes to stain bait as part of your hobby? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q405. Can you tell me the year in which you first used bronze dyes to stain bait as part of your hobby?

19\_\_\_\_\_

**Q406. Have you ever made or handled chemicals in any of your hobbies?**

Yes .....1  
No .....2 **Go to Q407**

Q406a. What were these chemicals?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Q406b. Were you making chemicals, handling chemicals or involved in some other way

Making chemicals ..... 1  
Handling chemicals ..... 2  
Involved in another  
process with chemicals ..... 3

Can you list these chemicals in the blue sheet titled "List of Chemicals". We may need to speak to you about these chemicals in more detail at a later date.

**Q407. Have you ever made rubber or made electrical cables as a hobby? This does not include making things using rubber.**

Yes ..... 1  
No ..... 2 **Go to Q418**

Q408. In how many separate years did you make rubber or make electrical cables as part of your hobby?

\_\_\_\_\_ **No. of years**

Q409. During that time, did you make rubber or make electrical cables: daily; weekly; monthly; or less often?

Daily ..... 1 Goto 410a  
Weekly ..... 2 Goto 410b  
Monthly ... 3 Goto 410c  
Less often. 4 Goto 410d

Q410a. On average how many hrs per day did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per day**

Q410b. On average how many hrs per week did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per week**

Q410c. On average how many hrs per month did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q410d. On average how many hrs per year did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per year**

Q411. You have told me about your lifetime work making rubber or making electrical cables. Now I would like to ask you specifically about the last 12 months.

Have you been making rubber or making electrical cables as part of your hobby in the past 12 months ie since November '96?

Yes ..... 1  
No ..... 2 **Go to Q416**

Q412. In the last 12 months, that is since November 1996, did you make rubber or make electrical cables as part of your hobby: daily; weekly; monthly; or less often?

Daily ..... 1 Goto 413a  
Weekly ..... 2 Goto 413b  
Monthly ... 3 Goto 413c  
Less often 4 Goto 413d

Q413a. Again, in the last 12 months, on average how many hrs per day did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per day**

Q413b. Again, in the last 12 months, on average how many hrs per week did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per week**

Q413c. Again, in the last 12 months, on average how many hrs per month did you spend making rubber or making electrical cables as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q413d. Again, in the last 12 months, on average how many hrs per year did you spend making rubber or making electrical cables?

\_\_\_\_\_ **hrs per year**

Q414. Now I would like to ask you specifically about the last two weeks. Have you been making rubber or making electrical cables as part of your hobby in the last two weeks?

Yes ..... 1  
No ..... 2 **Go to Q416**

Q415. How many hours in total did you spend making rubber or making electrical cables as part of your hobby in the last two weeks?

\_\_\_\_\_ **total no. of hours**

Q416. When was the last time that you made rubber or made electrical cables as part of your hobby? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q417. Can you tell me the year in which you first made rubber or made electrical cables as part of your hobby?

19\_\_\_\_\_

**Q418. Have you ever worked with leather in any of your hobbies? This includes making leather, cutting, finishing leather goods, shoe making or shoe repairing.**

Yes ..... 1

No ..... 2 **Go to Q429**

Q418a. Were you (read out the following options)

making leather ..... 1

cutting leather ..... 2

finishing leather goods ..... 3

a shoe maker ..... 4

a shoe repairer ..... 5

involved in another process of leather work (specify ..... ) ..... 6

Q419. In how many separate years did you work with leather as a hobby?

\_\_\_\_\_ **No. of years**

Q420. During that time, did you work with leather: daily; weekly; monthly; or less often?

Daily ..... 1 **Goto 421a**

Weekly ..... 2 **Goto 421b**

Monthly ... 3 **Goto 421c**

Less often. 4 **Goto 421d**

Q421a. On average how many hrs per day did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per day**

Q421b. On average how many hrs per week did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per week**

Q421c. On average how many hrs per month did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q421d. On average how many hrs per year did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per year**

Q422. You have told me about your lifetime work with leather as part of your hobby. Now I would like to ask about the last 12 months specifically. Have you been working with leather as part of your hobby in the past 12 months ie since November '96?

Yes ..... 1

No ..... 2 **Go to Q427**

Q423. In the last 12 months, that is since November 1996, did you work with leather as part of your hobby: daily; weekly; monthly; or less often?

Daily ..... 1 **Goto 424a**

Weekly ..... 2 **Goto 424b**

Monthly ... 3 **Goto 424c**

Less often 4 **Goto 424d**

Q424a. Again, in the last 12 months, on average how many hrs per day did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per day**

Q424b. Again, in the last 12 months, on average how many hrs per week did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per week**

Q424c. Again, in the last 12 months, on average how many hrs per month did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q424d. Again, in the last 12 months, on average how many hrs per year did you work with leather as part of your hobby?

\_\_\_\_\_ **hrs per year**

Q425. Now I would like to ask you specifically about the last two weeks. Have you been working with leather as part of your hobby in the last 2 weeks?

Yes ..... 1

No ..... 2 **Go to Q427**

Q426. How many hours in total did you spend working with leather, as part of your hobby, in the last two weeks?

\_\_\_\_\_ **total no. of hours**  
Q427. When was the last time that you worked with leather as part of your hobby? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)  
Q428. Can you tell me the year in which you first worked with leather as part of your hobby?

19\_\_\_\_  
**Q429. Have you ever used paint in any of your hobbies (Past-times, work around the house etc)?**

Yes .....1  
No.....2 **Go to Q440**

Q429a. What were these paints?

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Q430. In how many separate years did you use paints in this hobby?

\_\_\_\_\_ **No. of years**  
Q431. During that time, did you use paints, as part of your hobby: daily; weekly; monthly; or less often?  
Daily .....1 Goto 432a  
Weekly.....2 Goto 432b  
Monthly ...3 Goto 432c  
Less often.4 Goto 432d

Q432a. On average how many hrs per day did you spend using paint as part of your hobby?

\_\_\_\_\_ **hrs per day**  
Q432b. On average how many hrs per week did you use paints as part of your hobby?

\_\_\_\_\_ **hrs per week**  
Q432c. On average how many hrs per month did you use paints as part of your hobby?

\_\_\_\_\_ **hrs per month**

Q432d. On average how many hrs per year did you spend use paints as part of your hobby?

\_\_\_\_\_ **hrs per year**  
Q433. You have told me about your lifetime contact with paint as part of your hobby. Have you been using paints as part of your hobby, in the past 12 months ie since November '96?

Yes .....1  
No .....2 **Go to Q438**

Q434. In the last 12 months, that is since November 1996, did you use paints as part of your hobby: daily; weekly; monthly; or less often?

Daily .....1 Goto 435a

Weekly.....2 Goto 435b

Monthly ...3 Goto 435c

Less often..4 Goto 435d

Q435a. Again, in the last 12 months, on average how many hrs per day did you use paint as part of your hobby?

\_\_\_\_\_ **hrs per day**  
Q435b. Again, in the last 12 months, on average how many hrs per week did you use paint as part of your hobby?

\_\_\_\_\_ **hrs per week**  
Q435c. Again, in the last 12 months, on average how many hrs per month did you use paint as part of your hobby?

\_\_\_\_\_ **hrs per month**  
Q435d. Again, in the last 12 months, on average how many hrs per year did you use paint as part of your hobby?

\_\_\_\_\_ **hrs per year**  
Q436. Now I would like to ask you specifically about the last two weeks. Have you been using paint as part of your hobby in the last 2 weeks?

Yes .....1  
No .....2 **Go to Q438**

Q437. How many hours in total did you spend using paints as part of your hobby in the last two weeks?

\_\_\_\_\_ **total no. of hours**  
Q438. When was the last time that you used paint as part of your hobby? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q439. Can you tell me the year in which you first used with paint as part of your hobby?

19 \_\_\_\_\_

**Q440. Do you have any other hobbies on which you have spent more than 10 hours per week, for at least 1 year at any stage in your life?**

Yes ..... 1

No ..... 2 **Go to Q123**

Q441. Please name these hobbies and tell me how many hours per week you spent on each of these hobbies

Hobby	Hrs / wk
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____

### **Hair tints and dyes**

I would now like to ask you about hair dyes or colour rinses that may have been applied to your hair. This does not include assisting others to apply hair dyes on themselves.

Q123. Have you *ever* used **permanent hair dyes**, that is, hair dyes that do not wash out but only grow out?

Yes ..... 1

No ..... 2 **Go to Q131**

Q124. In how many separate years did you use, or have you been using, permanent hair dyes?

\_\_\_\_\_ **No. of years**

Q124a. In those years, on average how many months per year did you use permanent hair dyes?

\_\_\_\_\_ **months per year**

Q125. Have you used permanent hair dyes in the past 12 months (ie. since October '96)?

Yes ..... 1

No ..... 2 **Go to Q130**

Q126. During the last 12 months, how many times in total did you use permanent hair dyes? (that is since November '96)

\_\_\_\_\_ **Total number of times**

Q127. Have you used permanent hair dyes in the last two weeks?

Yes ..... 1

No ..... 2 **Go to Q130**

Q128. How many times have you used permanent hair dyes in the last two weeks?

\_\_\_\_\_ **Total number of times**

Q129. When was the last time that you used permanent hair dyes in the last two weeks?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (**dd/mm/yy**) **Go to Q131**

Q130. When was the last time that you used permanent hair dyes? Please give the year, if possible. If you have used permanent hair dyes in the last 12 months (ie. since October '96), can you tell me the month that you last used it?

\_\_\_\_/19\_\_\_\_ (**mm/yy**)

**Q131. Have you ever used semi-permanent hair dyes**, that is, hair dyes that wash out after about six washes?

Yes ..... 1

No ..... 2 **Go to Q139**

Q132. In how many separate years did you use, or have you been using, semi-permanent hair dyes?

\_\_\_\_\_ **No. of years**

Q132a. In those years, on average how many months per year did you use semi-permanent hair dyes?

\_\_\_\_\_ **months per year**

Q133. Have you used semi-permanent hair dyes in the past 12 months (ie. since October '96)?

Yes ..... 1

No ..... 2 **Go to Q138**

Q134. During the last 12 months, how many times in total did you use semi-permanent hair dyes? (that is since November '96)

\_\_\_\_\_ Total number of times

Q135. Have you used semi-permanent hair dyes in the last two weeks?

Yes ..... 1

No.....2 **Go to Q138**

Q136. How many times have you used semi-permanent hair dyes in the last two weeks?

\_\_\_\_\_ Total number of times

Q137. When was the last time that you used semi-permanent hair dyes in the last two weeks?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (dd/mm/yy) **Go to Q139**

Q138. When was the last time that you used semi-permanent hair dyes? Please give the year, if possible. If you have used semi-permanent hair dyes in the last 12 months (ie. since October '96), can you tell me the month that you last used it?

\_\_\_\_/19\_\_\_\_ (mm/yy)

**Q139.** Have you ever used **colour rinses**, that is, hair dyes that wash out next time you wash your hair (**circle 1 or 2**)?

Yes ..... 1

No.....2 **Go to Water**

Q140. In how many separate years did you use, or have you been using, colour rinses

\_\_\_\_\_ No. of years

Q140a. In those years, on average how many months per year did you use colour rinses?

\_\_\_\_\_ months per year

Q141. Have you used colour rinses in the past 12 months (ie. since October '96)?

Yes ..... 1

No.....2 **Go to Q146**

Q142. During the last 12 months, how many times in total did you use colour rinses? (that is since November '96)

\_\_\_\_\_ Total number of times

Q143. Have you used colour rinses in the last two weeks?

Yes ..... 1

No .....2 **Go to Q146**

Q144. How many times have you used colour rinses in the last two weeks?

\_\_\_\_\_ Total number of times

Q145. When was the last time that you used colour rinses in the last two weeks?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (dd/mm/yy) **Go to Water**

Q146. When was the last time that you used colour rinses? Please give the year, if possible. If you have used colour rinses in the last 12 months (ie. since October '96), can you tell me the month that you last used it?

\_\_\_\_/19\_\_\_\_ (mm/yy)

## Water History

Code for portion size: (for column 7)

Cup .....	1
Mug .....	2
Glass - small/pony .....	3
Glass - medium/middy .....	4
Glass - large/schooner .....	5
Small bottle/can (285 ml) .....	6
Half bottle/375 ml stubbie/normal can ...	7
Large bottle (750 ml bottle of wine).....	8
Half nip.....	9
Nip.....	10
Double nip.....	11
Other – specify .....	12

Now I would like to ask you about what you have had to drink, including water, in the last 12 months (Interviewer – For each of the drinks listed in column 1 ask the following:

Q1) Have you drunk ... in the last 12 months? If no, write no and skip to next drink.

If yes, Q2) Would you have drunk ... every day, every week, every months or less often?

(1) Type of beverage	(2) NO - did not drink	(3) YES-(daily) On average, how many drinks would you have had per day?	(4) YES-(every week) On average, how many drinks would you have had per week?	(5) YES (every month) On average, how many drinks would you have had per month?	(6) YES - (less often) How many drinks would you have had in the last 12 months?	(7) What portion size do you usually have? <b>(use code above for portion sizes)</b>
Tap Water, as just water, from the community water supply where you live						1 2 3 4 5 6 7 8 9 10 11
Tap Water, as just water, from the community water supply of your work place. Where do you work? _____						1 2 3 4 5 6 7 8 9 10 11
Bottled Water						1 2 3 4 5 6 7 8 9 10 11
Tank Water						1 2 3 4 5 6 7 8 9 10 11
Well Water						1 2 3 4 5 6 7 8 9 10 11
Other Water 1 (specify) _____						1 2 3 4 5 6 7 8 9 10 11
Other Water 2 (specify) _____						1 2 3 4 5 6 7 8 9 10 11
Instant coffee						1 2 3 4 5 6 7 8 9 10 11
Brewed, espresso, filtered coffee						1 2 3 4 5 6 7 8 9 10 11
Decaf coffee						1 2 3 4 5 6 7 8 9 10 11
Hot chocolate, Milo, made with water not milk						1 2 3 4 5 6 7 8 9 10 11
Tea						1 2 3 4 5 6 7 8 9 10 11
Carbonated, fizzy drinks (non alcoholic)						1 2 3 4 5 6 7 8 9 10 11
Fruit juice – bought						1 2 3 4 5 6 7 8 9 10 11
Fruit juice - home-made						1 2 3 4 5 6 7 8 9 10 11
Cordial						1 2 3 4 5 6 7 8 9 10 11
Home Brews						1 2 3 4 5 6 7 8 9 10 11
Beer						1 2 3 4 5 6 7 8 9 10 11
Wine						1 2 3 4 5 6 7 8 9 10 11
Fortified wines (sherry, port)						1 2 3 4 5 6 7 8 9 10 11
Spirits specify if ice or water added						1 2 3 4 5 6 7 8 9 10 11
Is there any other type of drink that you have that I haven't mentioned (specify) _____						1 2 3 4 5 6 7 8 9 10 11



**For ACT and SA only. (Bungendore – Go to smoking questions)**

Q8. If you drink water from the tap, do you currently use a chlorine filter for your drinking water?

- Yes ..... 1  
No, never used filter ..... 2 **Go to Q10**  
Used filter in past,  
but not at present..... 3  
Do not use tap water  
for drinking purposes ..... 4 **Go to Q10**

Q9. How many years have you used a chlorine filter for your drinking water?

\_\_\_\_\_ **Number of years**  
\_\_\_\_\_ **Number of months if less  
than one year**

Q10. What is the *main* source of water that you use for showering and bathing?

- Tap water from the  
community supply ..... 1  
Household tank water .. 2 **Go to smoking**  
A household well ..... 3 **Go to smoking**  
Other (specify) \_\_\_\_\_ 4 **Go to smoking**

Q11. Do you use a chlorine filter for water that you use for showering and bathing?

- Yes ..... 1  
No, never used filter . 2 **Go to smoking**  
Used filter in past,  
but not at present..... 3

Q12. How many years have you used a chlorine filter for your domestic water source?

\_\_\_\_\_ **Number of years**  
\_\_\_\_\_ **Number of months if less  
than one year**

**Smoking**

Q1. Have you ever smoked tobacco?

- Yes ..... 1  
No..... 2 **Go to Q23**

Q2. Are you currently a tobacco smoker?

- Yes ..... 1  
No..... 2 **Go to Q12**

Q3. How old were you when you first started smoking tobacco?

\_\_\_\_\_ **Age in years**

Q4. Have you ever stopped smoking tobacco for a more than 6 months at a time?

- Yes ..... 1  
No ..... 2 **Go to Q7**

Q5. When was the last time that you stopped smoking tobacco for at least 6 months? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q5a. When you stopped smoking that time, when did you start smoking again? Please tell me the month and year.

\_\_\_\_\_/19\_\_\_\_ (mm/yy)

Q6. Not counting the times that you stopped smoking for a at least 6 months, how many years in total have you been smoking tobacco?

\_\_\_\_\_ **Number of years**  
\_\_\_\_\_ **Number of months if less  
than one year**

Q7. Over the last few years, what type of tobacco did you *mainly* smoke? (one option only)

- Cigarettes, filtered ..... 1  
Cigarettes, unfiltered ..... 2  
Cigars..... 3  
Pipes ..... 4

Q8. At present, what type of tobacco are you *mainly* smoking? (one option only)

- Cigarettes, filtered ..... 1  
Cigarettes, unfiltered ..... 2  
Cigars..... 3  
Pipes ..... 4

Q9. At present, on average, how many of the following do you smoke a day? (give a number for each type of tobacco smoked)

No. / day  
Cigarettes, filtered .....  
Cigarettes, unfiltered .....  
Cigars.....  
Pipes .....

Q10. Has this always been your pattern of smoking?

- Yes ..... 1 **Go to Q18**  
No ..... 2

Q11. In the past, on average, how many of the following did you smoke a day? (give a number for each type of tobacco smoked)

No. / day

Cigarettes, filtered..... \_\_\_\_\_  
Cigarettes, unfiltered... \_\_\_\_\_  
Cigars..... \_\_\_\_\_  
Pipes..... \_\_\_\_\_

Q12. How old were you when you first started smoking tobacco?

\_\_\_\_\_ Age in years

Q14. How old were you when you last stopped smoking tobacco?

\_\_\_\_\_ Age in years

Q15. Not counting the times that you stopped smoking for periods greater than 6 months at a time, how many years in total were you smoking tobacco?

\_\_\_\_\_ Number of years

\_\_\_\_\_ Number of months if less than one year

Q20. In the last 4 weeks, what type of tobacco were you mainly smoking? **(One option only)**

Cigarettes, filtered..... 1  
Cigarettes, unfiltered..... 2  
Cigars..... 3  
Pipes..... 4

Q21. During this time, on average, how many of the following did you smoke a day?

No. / day

Cigarettes, filtered..... \_\_\_\_\_  
Cigarettes, unfiltered... \_\_\_\_\_  
Cigars..... \_\_\_\_\_  
Pipes..... \_\_\_\_\_

Q22 When was the last time you smoked tobacco in the last four weeks? Please specify date if possible. (If person is still smoking, enter today's date)

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (dd/mm/yy)

Q16. During the time that you were smoking tobacco, what type of tobacco did you *mainly* smoke?

Cigarettes, filtered ..... 1  
Cigarettes, unfiltered ..... 2  
Cigars..... 3  
Pipes ..... 4

Q17. During that time, on average, how many of the following did you smoke a day? (give a number for each type of tobacco smoked)

No. / day

Cigarettes, filtered ..... \_\_\_\_\_  
Cigarettes, unfiltered ... \_\_\_\_\_  
Cigars..... \_\_\_\_\_  
Pipes ..... \_\_\_\_\_

Q18. Have you been smoking tobacco in the last 4 weeks?

Yes ..... 1  
No ..... 2 **Go to Q23**

Q19. In the last 4 weeks, how many days in total have you been smoking tobacco?

\_\_\_\_\_ Number of days

## Passive Smoking

Q23. How many people in your household, apart from yourself, smoke inside the house? \_\_\_\_\_ persons. (If zero go to next page)

Now I would like to ask you some questions about each of these inside smokers separately. If one of these inside smokers is your spouse or partner, please tell us about that person first.

	Person 1	Person 2	Person 3
Q24. Is this your spouse or partner? Ask for person 1 only)	Yes.....1 No.....2		
Q25. Does this person smoke while in the same room that you are in: every day; every week; every month; or less often?	Every day .....1 Every week .....2 Every month .....3 Less than monthly .....4	Every day ..... 1 Every week ..... 2 Every month ..... 3 Less than monthly ..... 4	Every day ..... 1 Every week ..... 2 Every month ..... 3 Less than monthly ..... 4
Q26. In the last 4 weeks, how many smokes in total would he/she have smoked while in the same room as you?	_____ smokes	_____ smokes	_____ smokes
Q27. In the last 4 weeks, has he/she been mainly smoking: filtered cigarettes; unfiltered cigarettes; cigars or a pipe?	Filtered cigarettes .....1 Unfiltered cigarettes .....2 Cigars .....3 Pipes .....4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars ..... 3 Pipes ..... 4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars..... 3 Pipes ..... 4

Q28. In the last 4 weeks, have you been sharing an office, work room or other enclosed space, including vehicles, with a person who smoked tobacco inside that space?

Yes .....1

No.....2 **Go to Q32**

Now I would like to ask you some questions about the persons apart from yourself who smoke tobacco inside that space.

	Person 1	Person 2	Person 3
Q29. Does this person smoke while in the same room that you are in: every day; every week; every month; or less often?	Every day .....1 Every week .....2 Every month .....3 Less than monthly .....4	Every day ..... 1 Every week ..... 2 Every month ..... 3 Less than monthly ..... 4	Every day ..... 1 Every week ..... 2 Every month ..... 3 Less than monthly ..... 4
Q30. In the last 4 weeks, how many smokes in total would he/she have smoked while in the same room as you?	_____ smokes	_____ smokes	_____ smokes
Q31. In the last 4 weeks, has he/she been mainly smoking: filtered cigarettes; unfiltered cigarettes; cigars or a pipe?	Filtered cigarettes .....1 Unfiltered cigarettes .....2 Cigars .....3 Pipes .....4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars ..... 3 Pipes ..... 4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars..... 3 Pipes ..... 4

Q32. Next, I want to ask you about how many years in total of primary schooling and secondary schooling you completed. How many years of both primary and secondary schooling did you complete?

\_\_\_\_\_ Years

Q33. And did you complete any further education or training after leaving secondary school?

Yes .....1

No .....2 **Go to Q35**

Q34. What was the highest level of education that you have completed was it, a vocational certificate, a trade certificate, an associate diploma, a full diploma, a bachelor degree, a graduate diploma or a master or higher degree?

Voc C .....1

Trad C .....2

Ass D .....3

Dipl .....4

Bach .....5

Grad D .....6

Mast .....7

Q35. Thankyou, that is the end of the questions for now, before I go I want to remind you:

**If urine 1 is indicated.** To remember to give us a urine sample in the small bottle in the bag labelled 1. Now from my notes I see that you are going to leave it for us c

\_\_\_\_\_  
\_\_\_\_\_

Also I want to remind you to start recording your fluid intake on the yellow fluid intake diary that ...(HV)... showed you. That starts when you first get up tomorrow morning . We also want you to record your showering and bathing outside ...(Respondent Location)... as per the yellow diary. We want you to keep the diary until we ring you again in exactly 14 days from now on .....

**If blood is to be done** , Also, some time in the next 14 days the Macquarie pathology lab will call you to arrange for your blood sample to be taken.

If you have any questions about procedure during the next 14 days please give us a

call on the number that is on top of your yellow appointment sheet list.

Thank you very much once again for assisting us in this medical research and we will speak to you again in 14 days.

### Interviewer's comments

(to be completed at the end of each of interviews)

#### 1. Interview outcome

Completed..... 1

Refusal ..... 2

Language problem ..... 3

Too ill..... 4

Unable to complete ..... 5

Give reason \_\_\_\_\_

#### 2. Was the participant responsive?

Not at all - uninterested, reticent.... 1

Fairly cooperative and responsive.. 2

Very cooperative, responsive..... 3

Very cooperative, responsive, interested ..... 4

#### 3. Did the participant seem to remember his/her medical history?

No ..... 1

Fairly well, some problems..... 2

Very well ..... 3

Declined these questions..... 4

#### 4. Did the participant seem to remember his/her occupation/hobbies history?

No ..... 1

Fairly well, some problems..... 2

Very well ..... 3

Declined these questions..... 4

#### 5. Did the participant seem to remember his/her fluid consumption?

No ..... 1

Fairly well, some problems..... 2

Very well ..... 3

Declined these questions..... 4

#### 6. Did the participant seem to remember his/her smoking history?

No ..... 1

Fairly well, some problems..... 2

Very well ..... 3

Declined these questions..... 4

## Appendix 25a: NCEPH - Environmental Survey 1997

Study Director Dr Geetha Ranmuthugala - 6249 5603 or 019 443 879

# Environmental Health Questionnaire 2 EHQ2

ID Number \_\_\_\_\_

Name \_\_\_\_\_

Telephone \_\_\_\_\_

Special Notes \_\_\_\_\_

Date EHQ2 Scheduled \_\_\_\_\_

### Contact Log - To be completed for each attempt at the number

#	Date	Start Time	Stop Time	Result	Int.	Comments
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

### Introduction

Good evening, its ...(int name)... here from the Australian National University could I speak to ...(participant)... please.

Hello, ...(participant)... its ...(int name)... here from the Australian National University, how are you today. I'm ringing today to conduct the 2nd telephone interview with you.

Now this interview is shorter than the 1<sup>st</sup> one you did and will take about 12 minutes to go through. Can we do that now.?

Now, during this interview I will read out each question to you exactly as it is written and then I'll read out the answer categories for you to choose from. You then choose the answer category which best answers the question and I will record that answer exactly. Take as much time as you like for each question and ask me to repeat things if I am not being clear. It's important that we get exact details on these questions, even ones that may seem unimportant to you so we want you to think carefully about each question.

## PART 1 Medical problems

I would like to ask you about some medical conditions and treatment that you may have had in the last 2 weeks (ie since your last telephone interview a fortnight ago).

**Q1.** Have you had a bladder infection, or cystitis, diagnosed by a doctor during the last 2 weeks (ie since your last telephone interview a fortnight ago)?

Yes ..... 1

No ..... 2 **Go to Q4**

**Q2.** Can you give me an approximate date that this diagnosis was made? (if unable to give a date, identify the week that the diagnoses was made)

\_\_\_\_/\_\_\_\_/19 \_\_\_\_ (dd/mm/yy)

**Q3.** Are the symptoms still present?

Yes ..... 1

No ..... 2

**Q4.** Have you had a kidney infection diagnosed by a doctor during the last 2 weeks (ie since your last telephone interview a fortnight ago)?

Yes ..... 1

No ..... 2 **Go to Q7**

**Q5.** Can you give me an approximate date that this diagnosis was made? (if unable to give a date, identify the week that the diagnoses was made)

\_\_\_\_/\_\_\_\_/19 \_\_\_\_ (dd/mm/yy)

**Q6.** Are the symptoms still present?

Yes ..... 1

No ..... 2

**Q7.** Have you had bladder stones (not kidney stones) diagnosed by a doctor during the last 2 weeks (ie since your last telephone interview a fortnight ago)?

Yes ..... 1

No ..... 2 **Go to Q10**

**Q8.** Can you give me an approximate date that this diagnosis was made? (if unable to give a date, identify the week that the diagnoses was made)

\_\_\_\_/\_\_\_\_/19 \_\_\_\_ (dd/mm/yy)

**Q9.** Are the symptoms still present?

Yes ..... 1

No ..... 2 **Go to Q4**

**Q10.** Have you received radiation treatment during the last 2 weeks (ie since your last telephone interview a fortnight ago) This does not include diagnostic x-rays?

Yes ..... 1

No ..... 2 **Go to Q10**

**Q11.** How many times did you receive radiation treatment during the last 2 weeks?

\_\_\_\_\_ **No. of times**

**Q12.** On those occasions did you receive radiation treatment?

to your head and or neck ..... Yes No

to your chest ..... Yes No

to your abdomen ..... Yes No

to your pelvis ..... Yes No

to your upper limbs ..... Yes No

to your lower limbs ..... Yes No

to some other part of your

body ..... Yes No

What part was that?

**Q13.** When was the last treatment date

\_\_\_\_/\_\_\_\_/19 \_\_\_\_ (dd/mm/yy)

## PART 2 Job History

Now I'd like to discuss jobs, either full-time or part-time that you may have worked in during the last 2 weeks. (ie since your last telephone interview a fortnight ago)

**Q1.** Have you worked making or using dyes in the last 2 weeks?

Yes ..... 1

No ..... 2 **Go to Q3**

**Q2.** How many hours in total did you spend using or making dyes in the last two weeks?

\_\_\_\_\_ **total no. of hours**

**Q3.** Have you worked as a fisherman (as a job, not just for pleasure) in the last 2 weeks?

Yes ..... 1

No ..... 2 **Goto Q6**

Q4. Did you use bronze or other dyes to stain bait?

- Yes .....1  
No.....2 **Goto Q6**  
Don't know .....3 **Goto Q6**  
Cannot remember .....4 **Goto Q6**

Q5. How many hours in total did you spend working with bronze or other dyes used a bait in the last two weeks?

\_\_\_\_\_ **total no. of hours**

**Q6. Have you worked making or handling chemicals in the last 2 weeks?**

- Yes .....1  
No.....2 **Go to Q9**

Q7. Please name these chemicals?

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Q8. How many hours in total did you spend making or handling these chemicals in the last two weeks?

\_\_\_\_\_ **total no. of hours**

**Q9. Have you worked making rubber or making electrical cables in the last 2 weeks?**

- Yes .....1  
No.....2 **Go to Q11**

Q10. How many hours in total did you spend making rubber or making electrical cables in the last two weeks?

\_\_\_\_\_ **total no. of hours**

**Q11. Have you worked as a leather worker in the last 2 weeks? This includes leather cutting, finishing leather goods, shoe making or shoe repairing?**

- Yes .....1  
No.....2 **Go to Q14**

Q12. Were you (read out the following options)

- making leather .....1  
cutting leather .....2  
finishing leather goods .....3  
a shoe maker .....4  
a shoe repairer .....5  
or another activity  
(specify \_\_\_\_\_) .....6

Q13. In the last two weeks, how many hours in total did you spend working with leather

\_\_\_\_\_ **total no. of hours**

**Q14. Have you worked as a painter in the last two weeks?**

- Yes .....1  
No .....2 **Go to Q17**

Q15. What were the types of paint that you used?

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Q16. In the last two weeks, how many hours in total did you spend working with paint?

\_\_\_\_\_ **total no. of hours**

**Q17. Have you ever worked as a truck driver in the last two weeks. This includes long distance or around town truck driving?**

- Yes .....1  
No .....2 **Go to Q19**

Q18. In the last two weeks, how many hours in total did you work as a truck driver?

\_\_\_\_\_ **total no. of hours**

**Q19. Have you ever worked in an aluminium smelter in the last two weeks?.**

- Yes .....1  
No .....2 **Go to Q21**



Q20. In the last two weeks, how many hours in total did you spend working in that job?

\_\_\_\_\_ total no. of hours

### Hobbies

**I will now go through some of these activities again that you may have done as a hobby, past-time, as part of work around the house, or any other non-work related activities, since your last telephone interview a fortnight ago.**

**Q21. Have you made or used dyes as a hobby in the last 2 weeks?**

Yes .....1

No.....2 **Go to Q23**

Q22. How many hours in total would you have spent working on this hobby during the last 2 weeks?

\_\_\_\_\_ total no. of hours

**Q23. Have you fished, as a hobby, using bronze dyes to stain bait, in the last two weeks?**

Yes .....1

No.....2 **Go to Q25**

Q24. How many hours in total would you have spent using bronze dyes to stain bait during the last 2 weeks?

\_\_\_\_\_ total no. of hours

**Q25. Have worked with leather as a hobby, this includes making leather, cutting, finishing leather goods, shoe making or shoe repairing in the last 2 weeks?**

Yes .....1

No.....2 **Go to Q27**

Q26. How many hours in total would you have spent working on this hobby during the last 2 weeks?

\_\_\_\_\_ total no. of hours

**Q27. Have been painting as a hobby in the last two weeks?**

Yes .....1

No.....2 **Go to Q30**

Q28. What types of paint did you use?

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Q29. In the last two weeks, how many hours in total would you have spent painting as a hobby?

\_\_\_\_\_ total no. of hours

**Q30. Are there any other hobbies that you did for more than 10 hours per week, in the last two weeks?**

Yes .....1

No .....2 **Go to Q32**

Q31. Please tell me what these hobbies were how many hours in total you spent on each hobby during the last two weeks

Hobby	Hrs / wk
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____

### Hair tints and dyes

I would now like to ask you about any hair dyes you may have used in the last two weeks.

Q32. In the last 2 weeks, have you used permanent hair dyes, that is, hair dyes that do not wash out but only grow out?

Yes .....1

No .....2 **Go to Q35**

Q33. How many times have you used permanent hair dyes in the last 2 weeks?

\_\_\_\_\_ No. of times

Q34. When was the last time that you used permanent hair dyes in the last 2 weeks, please give me a date?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (dd/mm/yy)

Q35. Have you used semi-permanent hair dyes in the last 2 weeks. Semi-permanent hair dyes are those that wash out after about six washes?

Yes .....1

No .....2 **Go to Q38**

Q36. How many times have you used semi-permanent hair dyes in the last 2 weeks?

\_\_\_\_\_ **No. of times**

Q37. When was the last time that you used semi-permanent hair dyes in the last 2 weeks, please give me a date?  
 \_\_\_\_/\_\_\_\_/19\_\_\_\_ **(dd/mm/yy)**

Q38. Have you used colour rinses in the last 2 weeks. Colour rinses are hair dyes that wash out the next time you wash your hair?

Yes .....1  
 No.....2 **Go to Q38**

Q36. How many times have you used colour rinses in the last 2 weeks?

\_\_\_\_\_ **No. of times**

Q37. When was the last time that you used colour rinses in the last 2 weeks, please give me a date?  
 \_\_\_\_/\_\_\_\_/19\_\_\_\_ **(dd/mm/yy)**

## Water History

Code for portion size: (for column 6 of Q 38)

Cup.....1  
 Mug.....2  
 Glass - small/pony .....3  
 Glass - medium/middy .....4  
 Glass - large/schooner.....5  
 Small bottle/can (285 ml) .....6  
 Half bottle/375 ml stubbie/normal can ...7  
 Large bottle (750 ml bottle of wine).....8  
 Half nip .....9  
 Nip .....10  
 Double nip .....11  
 Other – specify.....12

Q38. Now I would like to ask you about what you have had to drink, including water, in the last 2 weeks (Interviewer – For each of the drinks listed in column 1 ask the following:

i) Have you drunk ... in the last 2 weeks? If no, write no and skip to next drink.

If yes, ii) Would you have drunk ... every day, every week, or less often?

(1) Type of beverage	(2) NO - did not drink	(3) YES-(daily) On average, how many drinks would you have had per day?	(4) YES-(every week) On average, how many drinks would you have had per week?	(5) YES - (less often) How many drinks would you have had in the last 2 weeks?	(6) What portion size do you usually have? (use code above for portion sizes)
Tap Water, as just water, from the community water supply where you live					1 2 3 4 5 6 7 8 9 10 11
Tap Water, as just water, from the community water supply of your work place. Where do you work? _____					1 2 3 4 5 6 7 8 9 10 11
Bottled Water					1 2 3 4 5 6 7 8 9 10 11
Tank Water					1 2 3 4 5 6 7 8 9 10 11
Well Water					1 2 3 4 5 6 7 8 9 10 11
Other Water 1 (specify) _____					1 2 3 4 5 6 7 8 9 10 11
Other Water 2 (specify) _____					1 2 3 4 5 6 7 8 9 10 11
Instant coffee					1 2 3 4 5 6 7 8 9 10 11
Brewed, espresso, filtered coffee					1 2 3 4 5 6 7 8 9 10 11
Decaf coffee					1 2 3 4 5 6 7 8 9 10 11
Hot chocolate, Milo, made with water not milk					1 2 3 4 5 6 7 8 9 10 11
Tea					1 2 3 4 5 6 7 8 9 10 11
Carbonated, fizzy drinks (non alcoholic)					1 2 3 4 5 6 7 8 9 10 11
Fruit juice – bought					1 2 3 4 5 6 7 8 9 10 11
Fruit juice - home-made					1 2 3 4 5 6 7 8 9 10 11
Cordial					1 2 3 4 5 6 7 8 9 10 11
Home Brews					1 2 3 4 5 6 7 8 9 10 11
Beer					1 2 3 4 5 6 7 8 9 10 11
Wine					1 2 3 4 5 6 7 8 9 10 11
Fortified wines (sherry, port)					1 2 3 4 5 6 7 8 9 10 11
Spirits specify if ice or water added					1 2 3 4 5 6 7 8 9 10 11
Is there any other type of drink that you have that I haven't mentioned (specify) _____					1 2 3 4 5 6 7 8 9 10 11

Q39. Have you been swimming in the last 2 weeks ie since your first telephone interview a fortnight ago?

Yes ..... 1

No ..... 2 **Go to Q44**

Q40. Did you swim in: chlorinated pools only; un-chlorinated pools only; or both chlorinated and un-chlorinated pools?

Chlorinated pools only ..... 1

Un-chlorinated pools only ..... 2 **Go to Q44**

Both ..... 3

Uncertain ..... 4 **Go to Q44**

I will now ask you a few questions about the times you swam in chlorinated pools only. Do not include the times that you swam in un-chlorinated pools, rivers, dams, or lakes when responding to these questions. If you are not sure whether the pools were chlorinated or not, do not include it as a swim in a chlorinated pool.

Q41. How many times did you swim in a chlorinated pool over the last 2 weeks.?

\_\_\_\_\_ **Number of years**

Q42. On average, how much time, in minutes, did you spend in the water each time?

\_\_\_\_\_ **Number of minutes on average**

Q43. When was the last time that you swam, please give me a date?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ **(dd/mm/yy)**

### **Smoking**

Q44. Have you been smoking tobacco in the last two weeks?

Yes ..... 1

No ..... 2 **Go to Q47**

Q45. Did you smoke tobacco: daily; weekly less often than that?

Daily ..... 1 **Go to Q45a**

Weekly ..... 2 **Go to Q45b**

Less often than that ..... 2 **Go to Q45c**

Q45a During the last two weeks, on average, how many of the following did you smoke a day? **No. / day**

Cigarettes, filtered ..... \_\_\_\_\_

Cigarettes, unfiltered... \_\_\_\_\_

Cigars ..... \_\_\_\_\_

Pipes ..... \_\_\_\_\_

Q45b. During the last two weeks, on average, how many of the following did you have per week?

**No. / wk**

Cigarettes, filtered ..... \_\_\_\_\_

Cigarettes, unfiltered ... \_\_\_\_\_

Cigars ..... \_\_\_\_\_

Pipes ..... \_\_\_\_\_

Q45c. During the last two weeks, on average, how many of the following would you have had in the two week time period?

**No. in 2 wks**

Cigarettes, filtered ..... \_\_\_\_\_

Cigarettes, unfiltered ... \_\_\_\_\_

Cigars ..... \_\_\_\_\_

Pipes ..... \_\_\_\_\_

Q46 When was the last time you smoked tobacco in the last two weeks, please give me a date

\_\_\_\_/\_\_\_\_/19\_\_\_\_ **(dd/mm/yy)**

### Passive Smoking

Q47. Has anyone inside your home been smoking tobacco in the last 2 weeks?

Yes .....1

No.....2 **Go to Q52**

Now I would like to ask you about any persons who have been smoking inside the house in the last 2 weeks. Please tell me about each one of them separately. If one of those inside smokers is your spouse or partner, please tell me about that person first.

	Person 1	Person 2	Person 3
Q48. Is this your spouse or partner? Ask for person 1 only)	Yes.....1 No.....2		
Q49. In the last 2 weeks, would the person have smoked in the same room that you were in: every day; every week; or less often?	Every day .....1 Every week .....2 Less often .....3	Every day ..... 1 Every week ..... 2 Less often ..... 3	Every day ..... 1 Every week ..... 2 Less often ..... 3
Q50. In the last 2 weeks, how many smokes in total would he/she have smoked while in the same room as you?	_____ smokes	_____ smokes	_____ smokes
Q51. In the last 2 weeks, has he/she been mainly smoking: filtered cigarettes; unfiltered cigarettes; cigars or a pipe?	Filtered cigarettes .....1 Unfiltered cigarettes .....2 Cigars .....3 Pipes .....4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars ..... 3 Pipes ..... 4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars..... 3 Pipes ..... 4

Q52. In the last 2 weeks, have you been sharing an office, work room or other enclosed space, including vehicles, with a person who smoked tobacco inside that space?

Yes .....1

No.....2 **Go to Q56**

I will ask you some details about the persons apart from yourself who smoke tobacco inside that space.

	Person 1	Person 2	Person 3
Q53. In the last two weeks has the person been smoking while in the same room that you are in: every day; every week; or less often?	Every day .....1 Every week .....2 Less often .....3	Every day ..... 1 Every week ..... 2 Less often ..... 3	Every day ..... 1 Every week ..... 2 Less often ..... 3
Q54. In the last 2 weeks, how many smokes in total would he/she have smoked a day while in the same room as you?	_____ smokes	_____ smokes	_____ smokes
Q55. In the last 2 weeks, has he/she been mainly smoking: filtered cigarettes; unfiltered cigarettes; cigars or a pipe?	Filtered cigarettes .....1 Unfiltered cigarettes .....2 Cigars .....3 Pipes .....4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars ..... 3 Pipes ..... 4	Filtered cigarettes ..... 1 Unfiltered cigarettes ..... 2 Cigars..... 3 Pipes ..... 4

Q56. Do you regularly spend time in an enclosed space where there are one or more other inside smokers? For example, do you spend time, on a regular basis, at a pub where there are other inside smokers, or do you travel in a vehicle with a person who regularly smokes inside the vehicle?

Yes .....1

No.....2 **Go to Q62**

Q57. Where does this take place?

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Q58. How often are you in this enclosed space at the same time that at least one other person is smoking within the enclosed space. Is it daily; weekly; or less often?

Every day .....1

Every week .....2

Less often .....3

Q58. In the last two weeks, on average, how many hours per day did you spend in this enclosed area while at least one other person was smoking in the enclosed area?

\_\_\_\_\_ **average hours per day**

Q60 In the last two weeks, on average, how many hours per week did you spend in this enclosed area while at least one other person was smoking in the enclosed area?

\_\_\_\_\_ **average hours per week**

Q61. In the last two weeks, how many hours in total did you spend in this enclosed area while at least one other person was smoking in the enclosed area?

\_\_\_\_\_ **total hours**

Q62. Finally can I have you date of birth please?

\_\_\_\_/\_\_\_\_/19\_\_\_\_ (dd/mm/yy)

Q63. Would you like to make any comments on any aspect of the study?

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Thank you very much for being part of this study and helping us with this community health research. We are very grateful to you.

**For Bungendore respondents only.**

We have one more interview to be done in another 14 days from today and that will be about the same length as today's and will have similar questions.

So we will talk to you next on

\_\_\_\_/\_\_\_\_, what time is good for you?  
\_\_\_\_\_hrs.

**For all respondents**

Now tomorrow we want you to give us two urine samples, one from the second time you empty your bladder in the day and the other from the third time you empty your bladder. Those samples go in the bottles marked 2 and 3 on the caps. The second urine of the day goes in the bottle marked 2 and the third in the bottle marked 3. Write the time of the sample and the date on the labels then put the bottles in the plastic bags and then into the brown paper bag marked with the number 2.

Now we will collect that from you tomorrow, I have here that we should collect that from:

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and that you expect to have both samples ready by \_\_\_\_\_ **(Time)**. Is that still OK? **If not change details**

Please remember to put your residential history sheet and your fluid intake diary in the gold coloured envelope and put that inside the bag together with the sample bottles for us to collect. Have you finished the residential history sheet? **(If not, please do so before tomorrow).**

**Urine 3**

**Yes ..... 1**

**No..... 2-> Skip this section**

Now after you have done all that you should have another two sample bottles in a another brown paper bag marked 3. Now the bottles in this bag have got 2 and 3 on the caps just like the ones that you will use tomorrow but these are for the next day, that is \_\_\_\_\_...(name of day)...

Again on \_\_\_\_\_...(name of day)... we want you to give us two urine samples one from the second time you empty your bladder in the day and the other from the third time you empty your bladder in the day. Again they go in the bottles marked 2 and 3 on the caps. Write the time of the sample and date on the labels then put the bottles into the plastic bags and then into the brown paper bag marked with the number 3. We will collect these from you on \_\_\_\_\_...(name of day)... I have here that we should collect that from:

\_\_\_\_\_  
\_\_\_\_\_

and that you expect to have both samples ready by \_\_\_\_\_ (Time). Is that still OK?

**Blood**

**Yes ..... 1**

**No..... 2-> Skip this section**

Have you had your blood test done?

Yes ..... 1

No..... 2-Have you got an  
..... appointment made  
..... for the blood test?

Yes ..... 1

No ..... 2 ->We will get  
..... someone to call  
..... you in the next 2  
..... days to arrange  
..... that.

The results of your blood test will be mailed out to you before Christmas.

If you have any questions about the procedure during the next 14 days please give us a call on the number that is on top of your appointment sheet.

**Final Statement**

Once again , thank you very much for assisting us in this medical research. (and we will speak to you again in 14 days.)

**Interviewer's comments**

(to be completed at the end of each of interviews)

**1. Interview outcome**

Completed..... 1  
Refusal ..... 2  
Language problem ..... 3  
Too ill..... 4  
Unable to complete ..... 5  
Give reason \_\_\_\_\_

**2. Was the participant responsive?**

Not at all - uninterested, reticent.... 1  
Fairly cooperative and responsive.. 2  
Very cooperative, responsive ..... 3  
Very cooperative, responsive,  
interested ..... 4

**3. Did the participant seem to remember his/her medical history?**

No ..... 1  
Fairly well, some problems..... 2  
Very well ..... 3  
Declined these questions..... 4

**4. Did the participant seem to remember his/her occupation/hobbies history?**

No ..... 1  
Fairly well, some problems..... 2  
Very well ..... 3  
Declined these questions..... 4

**5. Did the participant seem to remember his/her fluid consumption?**

No ..... 1  
Fairly well, some problems..... 2  
Very well ..... 3  
Declined these questions..... 4

**6. Did the participant seem to remember his/her smoking history?**

No ..... 1  
Fairly well, some problems..... 2  
Very well ..... 3  
Declined these questions..... 4



ID number \_\_\_\_\_

## **Appendix 26:**

### **Diary of fluid intake and swimming & Diary of showering / bathing away from your place of residence**

ID Number .....

Start date .....

End date .....

Start this record the morning after telephone interview 1.

Record:

- All that you have to drink until you go to bed on the day of telephone interview 2.
- If you go swimming.
- If you have a shower, bath, sauna or spa away from your place of residence.

***Please leave the completed diary and residential history for collection with 'urine 2'.***

## Guidelines for keeping fluid intake record

Thank you for taking time to keep this diary. Following are guidelines to help you record your beverage consumption.

1. Start your beverage / fluid recording the morning after your first telephone interview. Starting that morning, record all that you have to drink for two weeks. You can stop recording when you go to bed the day you have your second telephone interview. Drink as you normally would during the two weeks.
2. Record everything that you have to drink in column 2. This includes water from the town water supply drunk as just water, bottled water, water from any other source (eg. well or tank), coffee (instant, brewed, decaf), tea, fruit juice, cordials, carbonated (fizzy) drinks, wine, beer, spirits, or anything else that you may have to drink. **When ever possible, record the beverage soon after drinking.** If this is not possible, enter each days record at the end of the day. It is important that you record all that you have had to drink *at least on a daily basis*.
3. Record the amount that you have had to drink in column 3. Use the guide given below to record the amount consumed. Record the number of serves in column 4. For example, if you have had *two medium glasses of orange juice*, record it as follows:

(1) Time	(2) TYPE of drink (eg town water, tank water, coffee, tea etc.)	(3) Amount	(4) Number of serves	(5) Place (town AND state)
10.30 am	orange juice	4 -	2 serves	Adelaide city, SA

Please use the following codes when filling in the amount of beverage consumed in column 2, and specify the number of serves.

Cup .....	1
Mug .....	2
Glass - small/pony .....	3
Glass - medium/middy .....	4
Glass - large/schooner .....	5
Small bottle/can (285 ml) .....	6
Half bottle/375 ml stubbie/normal can .....	7
Large bottle (750 ml bottle of wine) .....	8
Half nip .....	9
Nip .....	10
Double nip .....	11
Other (specify volume) .....	12

4. Please write down the place where you had this drink in column 5. For example, if you had a cup of coffee in Adelaide city, please write 'Adelaide city, SA' in column 5.
5. List only one beverage per line. Include a time for each drink in column 1.
6. Start a new page for each day. Circle the day (Sunday, Monday, Tuesday etc when you start each day), and enter the date.

Please do not hesitate to contact Geetha Ranmuthugala on 1 800 812 954 if you have problems. Your help is greatly appreciated.

Thank you.

**Instructions for Swimming / Sauna / Spa record**

If you go swimming (in Adelaide or elsewhere) in the time period between your first and second telephone interviews, please write down the place and duration of the swim. If you know whether the water was chlorinated or not, please write in this information. For example, if you went swimming in a private chlorinated pool on the 15th of October for 20 minutes, you would write the following (on the page that you record fluid intake for 15 October):

<b>Swimming (anywhere)</b>			<b>Showering / bathing/ Sauna / Spa (outside your place of residence)</b>		
Where (pool, sea, beach etc.)	Duration of swim (minutes)	Chlorinated / Unchlorinated/ Do not know	Where (town AND state)	Duration of shower/bath/spa /sauna (minutes)	Chlorinated/ Unchlorinated/ Do not know
Private pool Adelaide	20 minutes	Chlorinated			

**Instructions for Showering / Bathing / Spa / Sauna**

If you have a shower, bath, spa or sauna **away from your place of residence** in the time period between your first and second telephone interviews, please write down the place and duration of shower, bath, spa or sauna. Please indicate whether it was a shower, bath, spa or sauna. For example, if you had a shower in Port Adelaide, or if you used a spa in Sydney, you would write the following:

<b>Swimming (anywhere)</b>			<b>Showering / bathing/ Sauna / Spa (outside your place of residence)</b>		
Where (pool, sea, beach etc.)	Duration of swim (minutes)	Chlorinated / Unchlorinated/ Do not know	Where (town AND state)	Duration of shower/bath/spa/ sauna (minutes)	Chlorinated/ Unchlorinated/ Do not know
			Port Adelaide, SA	20 minutes shower	chlorinated
			Sydney NSW	20 minutes spa	chlorinated

See over for diary

ID number \_\_\_\_\_

Date .....

Day (circle one):      Sun    Mon    Tues    Wed    Thurs    Fri    Sat

<b>Fluid intake</b>				
(1) Time	(2) TYPE of drink (eg town water, tank water, coffee, tea, etc.)	(3) Amount	(4) Number of serves	(5) Place (town AND state)

**Codes for ‘amount’ in fluid intake diary  
(column 3)**

Cup ..... 1  
Mug ..... 2  
Glass - small/pony ..... 3  
Glass - medium/middy ..... 4  
Glass - large/schooner ..... 5  
Small bottle/can (285 ml) .....  
Half bottle/375 ml stubbie/normal can ..... 7  
Large bottle (750 ml bottle of wine) ..... 8  
Half nip ..... 9  
Nip ..... 10  
Double nip ..... 11  
Other (specify volume) ..... 12

**Special  
instructions for fluid type  
(column 2)**

Please record all fluids  
consumed  
If type = water - indicate  
if ‘boiled’ or  
straight off ‘tap.’  
If type = spirits, indicate if  
water or ice added

<b>Swimming (anywhere)</b>			<b>Showering / bathing/ Sauna / Spa (outside your place of residence)</b>		
Where (pool, sea, beach etc.)	Duration of swim (minutes)	Chlorinated / Unchlorinated/ Do not know	Where (town AND state)	Duration of shower/bath/spa/ sauna (minutes)	Chlorinated/ Unchlorinated/ Do not know

ID number \_\_\_\_\_

Comments on fluid consumption

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## Appendix 27: Introductory letter (tailored for ACT)



20 October 1997

«Name» «Name»

«Address»

«Suburb», «State» «POST\_\_CODE»

Dear Mr. «NAME»

I am writing to you to ask for your help in a medical research project conducted by the National Centre for Epidemiology and Population Health (NCEPH), at the Australian National University.

We are studying the level of community exposure to substances in the environment that are believed to increase the risk of developing urinary bladder cancer. Exposure to certain chemicals and other substances in the work place and home environment may increase the risk of developing urinary bladder cancer. Tobacco smoking, alcohol consumption, and certain medical conditions are also thought to increase the risk of developing bladder cancer. This study will help examine a link between exposure to these potentially harmful substances and the extent of bladder cell damage in the community. The degree of bladder cell damage is used as a biological marker of the communities potential to develop cancer. Health regulatory organisations depend on such research to set safety values for human exposure to potentially harmful substances. This study will therefore benefit the health of the community.

We are seeking your help as a resident of the ACT, and asking you, and all other eligible member of your household, to take part in this study. Your name was randomly selected from the white pages. Any person in your household who meets the following eligibility criteria can participate in the study:

- Male aged between 30 and 65 years;
- Resident in the ACT for a minimum period of six months;
- Not a regular swimmer in chlorinated swimming pools; and
- Never been diagnosed as having cancer. This does not include skin cancer.

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NATIONAL CENTRE FOR EPIDEMIOLOGY AND POPULATION HEALTH  
THE AUSTRALIAN NATIONAL UNIVERSITY  
CANBERRA ACT 0200 AUSTRALIA

Telephone: (02) 6249 2378

Facsimile: (02) 6249 0740

Participation in this study involves the following.

- A visit by one of our researchers to explain the study further, and to go through the process with you.
- Participation in two telephone interviews, a fortnight apart. During these interviews, we will ask you about certain substances that you may have come in to contact with as part of your daily activities.
- Maintain a diary of fluid consumption for two weeks.
- Provide urine samples on two days, a fortnight apart
- Provide a blood sample for vitamin levels. This blood test can be done at your home, or at any one of the many Macquarie Pathology Services collection rooms in the ACT, at no cost to you.

I would be most grateful to you if you could find the time to help us with this study. Your participation is invaluable for the success of this project. Participation is voluntary and all information provided by you will be kept strictly confidential. You will not be identifiable from the reporting of the findings. Please take some time to read the enclosed brochure with answers to frequently asked questions.

An ANU researcher will call you in the next few days to speak to you about this project. If you are able to assist us, we would like to make an appointment to meet you at a convenient time. In the mean time, if you would like to discuss any aspect of the study, please do not hesitate to call me on 1 800 812 954.

Your assistance is greatly appreciated.

Thank you.

Yours sincerely,

Dr Geetha Ranmuthugala  
Project Coordinator

## **Appendix 28: Study brochure**

### **Environmental Study**

#### **Answers to Frequently Asked Questions**

NATIONAL CENTRE FOR EPIDEMIOLOGY AND  
POPULATION HEALTH

THE AUSTRALIAN NATIONAL UNIVERSITY

#### **What is the purpose of this study?**

There is evidence to indicate that exposure to certain substances in the environment can increase the risk of developing urinary bladder cancer. Many of these substances are often found in our work and home environment. Although research to date indicates an increased risk of developing bladder cancer following contact with these substances over many years, the evidence is still inconclusive and therefore merits further investigation.

People working in certain jobs are more likely to come in contact with certain substances that have been implicated in the development of bladder cancer. For others, exposure to these potentially harmful substances may be through water, tobacco smoking or alcohol consumption. We are asking the general population to tell us whether they have been exposed to these substances that are believed to be harmful to the bladder. This information will be supplemented with analysis of urine samples. The results of this research will help establish a link between the extent of contact at the community level to possible cancer causing agents and the risk of developing bladder cancer. Analysis will be undertaken at the community level rather than at the individual participant level. This study therefore will act as a first but very important

step for undertaking further research on individuals considered to be at high risk of developing bladder cancer.

Furthermore, by measuring the degree of cell damage that results from contact with potential cancer causing substances, it is possible to identify the level of exposure beyond which contact is considered hazardous. Such information is invaluable to official regulatory authorities for reviewing existing guidelines and determining safe cut-off levels.

The results of this study will help us all - the community, the researchers and the officials - in developing a better understanding of the causes and risk of developing bladder cancer. The ultimate goal would be to improve the health of the community not only at the local and state level, but also nationally.

#### **Why am I getting a letter?**

Your name was randomly selected from the Adelaide white pages. We are seeking the help of 150 individuals in Adelaide.



### **Why should I participate?**

We are studying the risk to the community as a whole. There is a lot of variation from person to person, and studying the community as a whole will help us to overcome variation between persons. For a community-based study to be successful, it is important that all people selected complete the study. Your participation is therefore essential in ensuring the results of the study are of value to you and to your community.

### **Should I have cancer to participate?**

No, we are not looking for people with any particular kind of health problem(s).

### **How do you assess the risk of developing bladder cancer?**

Cell damage, cell death and replacement of dead cells with healthy cells is a normal process for every living being. Even in a perfectly healthy human being, there is a baseline level of cell damage and cell death. However, when healthy individuals are exposed to potentially harmful compounds in the environment, the number of cells that undergo damage and death can increase considerably.

Scientists now agree that the assessment of the extent of cell damage (to a particular body organ) in a community as a whole, can be used to estimate a community's risk of developing cancer (for that particular organ). Since we are studying urinary bladder cancer, we will be studying cells in the urine. Cells lining the bladder are continuously being shed into the urine and we will examine these cells for cell damage. **It must be emphasised that this test *cannot* be used to predict the chances of an individual developing bladder cancer as there are yet no agreed upon normal levels of cell damage for an individual.** However, the amount of damage seen in the community as a whole provides a crude estimate of the risk faced by that community. Comparisons across communities will help us to determine which communities are at higher risk than others, and, therefore, merit further investigation.

### **How do I benefit?**

Your participation will help provide a better understanding of the risk of developing bladder cancer for your community. Health regulatory authorities depend on such research findings to set safety values for exposure to potentially harmful substances. This type of research is essential to improve the health of the community as a whole.

### **Who can participate in the study?**

We are seeking the assistance of people who meet the following eligibility criteria:

- Males aged 30-65 years;
- Living in Adelaide for at least six months prior to the survey;
- Do not swim regularly (ie, once or more a week) in chlorinated swimming pools; and
- Never been diagnosed as having cancer.

All members of your household who meet the above criteria are eligible to participate.

We would be calling you in the near future to set up appointments. However, if you have any questions or concerns prior to our call, please do not hesitate to contact the project coordinator - Dr Geetha Ranmuthugala. The coordinator can be reached at:

Tel 1 800 812 954

Fax (02) 6249 0740

E-mail: [gpr868@nceph.anu.edu.au](mailto:gpr868@nceph.anu.edu.au)

Thank you for your assistance

## Appendix 29:

### **National Centre for Epidemiology and Population Health The Australian National University**

#### **Environmental Study Consent Form**

(To be signed by the participant in the presence of the ANU interviewer during the home visit. The participant's signature is to be witnessed by the ANU interviewer.)

I, ..... hereby consent to participate in the environment study of my free will.

I will assist by responding to the telephone interviews and providing the necessary urine samples as has been explained to me. I also agree to have a blood test done by a trained laboratory person.

I am free to withdraw from the study at any time.

Signed ..... Date .....

Witness ..... Date .....

Name of witnessing person .....

## Appendix 30:



### Environmental study

### Interviewers Declaration

I ..... hereby declare that all information provided to me during this study will be kept completely confidential. Identifiable information will only be accessible to those directly involved with this research study. No person will be identifiable from the reporting of the study results.

Signed .....

Date .....

NATIONAL CENTRE FOR EPIDEMIOLOGY AND POPULATION HEALTH  
THE AUSTRALIAN NATIONAL UNIVERSITY  
CANBERRA ACT 0200 AUSTRALIA

Telephone: (02) 6249 2378  
Facsimile: (02) 6249 0740  
gpr868@nceph.anu.edu.au

e-mail:

## Appendix 31:



### Environmental study

#### Instruction for collection of urine sample 1 (one)

Thank you for assisting us with this study. We need you to provide us with a sample of urine that you pass for the first time in the morning.

1. Use the glass bottle that we have provided to collect this sample. As it is glass, please be careful when handling the bottle.
2. It is important to fill the container right to the top, almost to overflow level. *It is important that there is no space for an air bubble when you put the lid on.*
3. Screw the cap on firmly.
4. Rinse the outside of the bottle thoroughly and wipe it dry with a clean paper towel or cloth.
5. Write the date and time on the label.
6. Place the bottle in the plastic bag that we have provided.
7. Place this in the brown paper bag and fold the top of the bag down.
8. Keep the sample out of direct light or heat at all times.
9. Place the sample in the agreed place.
10. If it is raining, or it is likely to rain, and we have arranged to collect the sample from a previously identified spot at your home, place the brown paper bag in a plastic bag to prevent it from getting wet in the rain.

We will be using this urine sample to measure organic matter in the urine picked up from the environment. These results cannot be interpreted on an individual basis and we will be looking at the results of the community as a whole. Therefore, the results of individual tests on these urine samples will not be available. Thank you once again for your support of this study.

## Appendix 32.



### Environmental study

#### Instruction for collection of urine sample 2 / 3

Thank you for assisting us with this study. We need you to provide us with the entire amount of urine you pass for the *second and third* times for the day. Please do not collect any urine from the first time you pass urine for the day.

1. Use the bottle marked '2' to collect the second void (ie. the second time you pass urine for the day)
2. Use the bottle marked '3' to collect the third void (ie. the third time you pass urine for the day)
3. For each collection, collect the ENTIRE VOLUME in the appropriate bottle
4. Screw the cap on firmly
5. Rinse the outside of the bottles thoroughly and wipe it dry with a clean paper towel or cloth
6. For each of the bottles, write the collection date and time on the labels
7. Place each bottle in the plastic bags that we have provided
8. Place the two plastic bags with the bottles in the one brown paper bag and fold the top of the bag down
9. Keep the samples out of direct light or heat at all times
10. Place the samples in the agreed place
11. Place the envelope containing the completed residential history sheet and the diary with the samples (inside the paper bag) for collection by our collectors.
12. If it is raining or it is likely to rain, and we have arranged to collect the sample from a previously identified spot at your home, place the brown paper bag in a plastic bag to prevent it from getting wet in the rain

We will be using these urine samples to count a particular type of cell in urine that may be affected by exposure to certain agents in the environment. As with the previous urine test, these results cannot be interpreted on an individual basis and we will be looking at the results of the community as a whole. The results of individual tests will not be available.

Thank you for your support of this study.

## **Appendix 33: Randomised controlled trial**

Since the discovery of its disinfection properties, chlorine has been used widely to disinfect community water supplies in industrially developed and developing countries. The discovery of disinfection by-products (DBP) in the early 1970's caused much concern over the potential public health risks associated with these by-products.

Although many epidemiological studies have been undertaken in an attempt to establish the causal link between DBP in drinking water and cancer, the evidence has not been convincing for several reasons. The long latency period associated with cancer development, the small relative risk over and above those drinking unchlorinated water, (as is with most environmental carcinogens), difficulty in assessing confounders, and the difficulty in accurately measuring and quantifying exposure, are all contributory factors.

This is a prospective study that measures and quantifies exposure to DBPs at an individual level. It overcomes the chronicity issue by using a biomarker of genotoxic damage.

### **1.1 Objectives**

This study will determine if exposure to DBP in chlorinated drinking water will alter the frequency of micronucleated bladder epithelial cells in humans, thereby providing evidence for, or against, the carcinogenic potential of DBP. Micronuclei in bladder epithelial cells are a biomarker of genotoxic damage. Micronuclei are DNA fragments or whole chromosomes that are not incorporated into daughter cells during mitosis: Chromosomal aberrations are thought to be an initial step in carcinogenesis. It is therefore proposed that the effect of DBP on the frequency of micronucleated bladder epithelial cells will serve as an indicator of the potential carcinogenicity of DBP in drinking water.

## 1.2 Setting

To establish a baseline for micronucleated bladder epithelial cells, it was necessary to identify an unchlorinated water supply. Bungendore is a community in NSW, 40 km north of Canberra, with a population of about 2500 people. A single water bore supplies the community with the bulk of its water for most of the year, demand being augmented by a second bore, especially during summer. The town supply was unchlorinated.

In response to the occasional finding of coliforms in routine monitoring, the Yarrowlumla Shire Council was considering the need to introduce chlorination in 1998. This situation presented an opportunity to conduct a pre- and post- chlorination RCT.

## 1.3 Sample size and power

Sample size calculation and justification of eligibility criteria are only summarised here as they have been provided in more detail in the methods chapter of this thesis.

Sample size was established from risk ratios estimated by case-control studies. Case control studies have a higher degree of measurement error resulting in bias of the risk assessment towards the null. It was therefore expected that the true relative risk would be higher than the estimated 1.2 – 1.8 collectively found in these studies. Accordingly, the sample size calculation was adjusted in order to detect a relative risk as low as 1.4. A total of 140 participants, (70 in each group) would be sufficient to demonstrate a relative risk of 1.4 with 80% power (table 33.1). These calculations used a confidence level of 0.05.

**Table 33.1: Summary of sample size and power calculation**

Number of participants	140			150		
Relative risk	1.35	1.40	1.45	1.40	1.45	1.50
Power	73.5	80.8	86.4	75.7	81.8	86.6

## **1.4 Sampling frame and study population**

The Bungendore electoral role by age group will be used to select all males aged between 45 and 65 years of age, resident in Bungendore. The rationale of using this age group, and a male only group, is provided in the methods chapter. Due to the relatively small population in Bungendore of approximately 2,500 residents, sampling is not thought necessary to find 70 males, aged 30 and 65 of years, meeting all eligibility criteria. All Bungendore households will therefore be sent letters to identify eligible persons. If more than 70 eligible persons (willing to participate) are identified, a sample of 70 persons will be randomly selected.

## **1.5 Study procedure**

All selected persons will be sent study information letters. Follow up telephone calls will be made to offer more detailed information and to determine eligibility and willingness to participate. Consenting persons will be randomly allocated to one of two groups by allocating each participant a number, and generating a list of random numbers using SAS software. The total number of random numbers generated will be half the total number of participants. Those participants whose number was drawn will be allocated to be in the initial experimental group.

On recruitment to the study, participants will be invited to provide informed consent and demographic information on themselves. An initial urine sample will be collected to determine the baseline rate of micronuclei in bladder epithelial cells.

Study participants will then be delivered bottled water on a weekly basis for five weeks. Study participants will be blinded to the chlorination status of the water. Each participant will be asked to drink at least two glasses of bottled water every day for the duration of the study. At the end of the fifth week, they will be invited to complete an environmental and health questionnaire, which will identify and quantify exposure to other known risk factors for bladder cancer. Detailed information on water consumption and exposure to chlorinated water supplies (e.g. chlorinated swimming pools, drinking patterns at work place, visiting people in chlorinated areas) will be collected in this questionnaire. A semi-quantitative food frequency questionnaire (FFQ) will be used to assess dietary intake of micronutrients which affect cell integrity, over



the same time period. At the end of the fifth week, second and third samples of urine will be collected on two consecutive days.

The next stage of the study will be a four-week wash out period where no bottled water will be delivered. Since micronuclei are measures of acute exposure, a four-week period is sufficient for levels to return to baseline level. It has been demonstrated by Rosin and Stich in 1983 that the frequency of micronucleated mucosal cells (of head and neck region) increase within seven days of commencing radiotherapy, and return to baseline levels within a month of cessation of treatment [Rosin, 1992 #489]).

The washout period will be followed by a crossover phase of the study. Individuals who were initially receiving chlorinated water will now receive unchlorinated water, and those initially receiving unchlorinated water will now receive chlorinated water. Participants will once again be blinded to the chlorination status of the bottled water. A fourth urine sample will be collected when water delivery commences, to ensure the return of micronuclei levels to baseline levels. Once again, participants will be requested to drink at least two glasses of bottled water a day. At the end of the fifth week, the environment and health questionnaire and the FFQ will be administered, and a fifth and sixth urine sample will be collected.

## **1.6 Source of water, bottling of water, and quality control**

Canberra water will be used as the source for bottling chlorinated water, while Bungendore water will be used as the source for unchlorinated water. Bottling of water and delivery will be done in accordance with established guidelines, and the water will be tested to ensure that NHMRC guidelines for drinking water are adhered to. (See pilot study 1). Water will be tested by ACTEW Corporation for DBP levels and microbiological quality prior to distribution to participants.

## **1.7 Measuring exposures**

Exposure will be quantified for each participant using the volume of water intake and the concentration of DBP in the water supply. This will be the external dose of

exposure. The concentration of DBP in urine will be used as a surrogate for the internal dose of exposure.

## **1.8 Measuring outcomes**

All collected urine samples will be examined for the frequency of micronucleated bladder epithelial cells, using the Fluorescence in-situ Hybridisation (FISH) technique. This will be done by a person trained in the method, and who will be blind to the exposure status of the study subject.

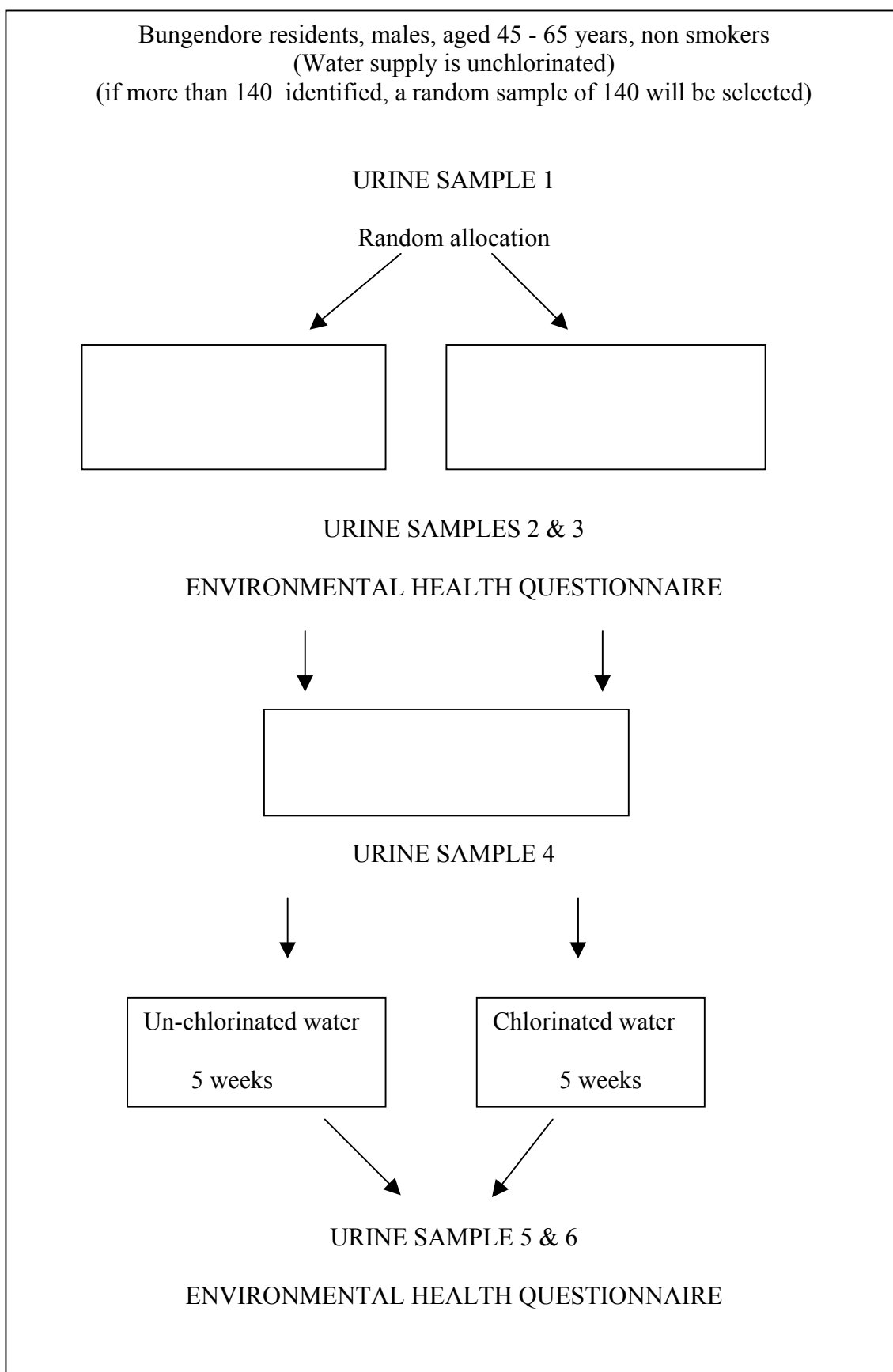
## **1.9 Summary of respondent burden**

A total of 140 participants will be invited to participate in the study. Each participant will be enrolled in the study for a period of 14 weeks, during which time they will be expected to drink at least two glasses of the provided bottled water per day, during the first and last five weeks of the study. They will also be required to provide six samples of urine, and respond to the environment and health questionnaire and FFQ twice. This has been diagrammatically represented in figure 33-1

## **1.10 Statistical Analysis**

Frequencies of micronucleated bladder epithelial cells will be examined for differences in the two groups using t-tests and analysis of variance. The frequency of micronucleated cells will also be examined in relation to the various DBP levels to determine if a dose response relationship exists using generalised linear modeling. The analysis will adjust for potential confounders using linear models including multiple regression, and ANOVA techniques.

**Figure 33-1. Diagrammatic representation of the double-blinded randomised controlled cross over trial**



## Appendix 34: Abbreviations used

ACT	Australian Capital Territory
AOX	Absorbable Organic Halogen
ASR	Age standardised incidence rate
DBP	Disinfection by-product
CHBrCl <sub>2</sub>	Bromodichloromethane
CHBr <sub>2</sub> Cl	Dibromochloromethane
CHBr <sub>3</sub>	Bromoform
CHCl <sub>3</sub>	Chloroform
FFQ	Food frequency questionnaire
FISH	Fluorescence in Situ Hybridisation
MAC	Maximum admissible concentration
ml	millilitre
NHMRC	National Health & Medical Research Council (Australia)
OR	Odds ratio
RR	Relative risk
RCT	Randomised Controlled Trial
THM	Trihalomethane
SE	Standard Error
RR	Relative risk
US EPA	United States Environmental Protection Agency
WFR	Weighted food record

## Appendix 35: Glossary

**Adduct** – A complex that forms when a chemical binds to a biological molecule, such as DNA or a protein.

**Apoptosis** – Programmed cell death as signaled by the nuclei in normally functioning human and animal cells when age or state of cell health and condition dictates. It is an active process requiring metabolic activity by the dying cell, often characterised by cleavage of the DNA into fragments that give a so-called laddering pattern on gels. Cells that die by apoptosis do not usually elicit the inflammatory responses that are associated with necrosis, though the reasons are not clear.

**Carcinogen** – A substance that causes cancer.

**Carcinogenesis** - The generation of cancer from normal cells, correctly the formation of a carcinoma from epithelial cells, but often used synonymously with transformation, tumourigenesis.

**Carcinogenicity** – The ability or tendency to produce cancer.

**Diploid** – Having a pair of each chromosome characteristics of a species (in man -  $2n$  or 46 chromosomes).

**Genotoxic** – Describes a substance which harms an organism by damaging its DNA

**Guideline** – Directing principle, not enforceable by law (as opposed to standard).

**Hypoploid** – Having less than the full complement of DNA.

**Lignin** - Lignins are derived from an abundant and renewable resource: trees, plants, and agricultural crops. Commercial lignin is currently produced as a co-product of the paper industry, separated from trees by a chemical pulping process. Lignosulfonates (also called lignin sulfonates and sulfite lignins) are products of sulfite pulping. Kraft lignins (also called sulfate lignins) are obtained from the kraft pulping process. Other delignification technologies use an organic solvent or a high pressure steam treatment to remove lignins from plants. Because lignins are very complex natural polymers with many random couplings, the exact chemical structure is not known. commercial lignosulfonates products comes from their dispersing, binding, complexing and emulsifying properties.

Industry first began to use lignins in the 1880s when lignosulfonates were used in leather tanning and dye baths. Since then, lignosulfonates have even found applications in food products, serving as emulsifiers in animal feed and as raw material in the production of vanillin. (Vanillin is widely used as an ingredient in food flavors, in pharmaceuticals and as a fragrance in perfumes and odor-masking products.) Lignin uses have expanded into literally hundreds of applications - impacting on many facets of our daily lives. (Source: Lignine Institute Home Page at <http://www.assnhq.com/li/whatis.htm>)

**Micronuclei** - Nuclei, separate from and additional to the main nucleus of a cell, produced during the telophase of mitosis or meiosis by lagging chromosomes or chromosome fragments derived from spontaneous or experimentally induced chromosomal structural changes.

**Mutation** – A permanent transmissible change in the genetic material. Origin: L. Mutatio from mutare = to change.

**Mutagenic** – Inducing genetic mutation.

**Necrosis** - The sum of the morphological changes indicative of cell death and caused by the progressive degradative action of enzymes, it may affect groups of cells or part of a structure or an organ. Origin: Gr. Nekrosis = deadness.

**Standard** – Measure or specification to which others conform. It is enforceable by law.

Acknowledgment: Definitions for medical terms were obtained from the On-line Medical Dictionary (Cancer Web) <http://www.graylab.ac.uk/omd/index.html>