

Epidemiological Study Pre-screening Form

Reference:	Piikivi, L. and U. Tolonen. 1989. EEG findings in chlor-alkali workers subjected to low long term exposure to mercury vapour. <i>Br. J. Ind. Med.</i> 46 : 370 - 375.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	Cross sectional study
Inhalation exposure	Y	Occupational exposure to Hg ⁰ vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Long-term (mean: 15.6 years) and low (approximately 25 µg/m ³) exposure.
Endpoint relevance (renal/neuro/immuno)	Y	Neurological

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	To discover if EEG and cEEG could show cerebral effects caused by long term low exposure to Hg vapour.
Study method described	Y	Methodology well described.
Control(s) Used	Y	41 referents, matched for age and sex.
Exposure characteristics described (groups, number of subjects, duration and level)	Y	41 male chlorine-alkali workers who had been exposed for 5 to 27 years. Mercury concentrations in blood (inorganic, organic, total) and urine were measured.
Statistical analysis conducted	Y	Student's t-tests

Results of Prescreen	(Y/N)	Comments
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Inclusion in Critical Review	Y	Endpoint and exposure relevant.
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Epidemiological Study Pre-screening Form

Reference:	Piikivi, L. and H. Hanninen. 1989. Subjective symptoms and psychological performance of chlorine-alkali workers. <i>Scand. J. Work Environ. Health.</i> 15 : 69 - 74.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	
Inhalation exposure	Y	Inorganic mercury vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Occupational exposure to an average of 25 µg/m ³ for a mean duration of 14 years.
Endpoint relevance (renal/neuro/immuno)	Y	Neurobehavioural and psychological evaluation

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	To discover if exposure concentrations of approximately 25 µg Hg/m ³ results in any measurable increase in subjective symptoms or disturbances on a psychological test battery.
Study method described	Y	Methodology well described.
Control(s) Used	Y	60 referents matched for age, sex, vocational status and education.
Exposure characteristics described (groups, number of subjects, duration and level)	Y	60 chlorine-alkali workers (average of 38 years old) with measured concentrations of inorganic mercury in blood and urine (µmol/mol creatinine and nmol/L), and organic and total mercury in blood.

Statistical analysis conducted	Y	Paired t-tests
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Results of Prescreen	(Y/N)	Comments
Inclusion in Critical Review	Y	Endpoints and exposure are relevant.

Epidemiological Study Pre-screening Form

Reference:	Piikivi, L. 1989. Cardiovascular reflexes and low long-term exposure to mercury vapour. <i>Int. Arch. Occup. Environ. Health.</i> 61 : 391 - 395.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	
Inhalation exposure	Y	Occupational exposure to Hg ⁰ vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Mean estimated exposure of 30 µg/m ³ for a mean duration of 16 years.
Endpoint relevance (renal/neuro/immuno)	Y	Neurological: psychological test battery and cardiovascular reflex responses.

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	To discover if long-term exposure to ~30 µg/m ³ had caused any increase in subjective symptoms associated with autonomic dysfunction or changes in cardiovascular reflex responses.
Study method described	Y	Methodology well described.
Control(s) Used	Y	41 referents matched for age and sex.
Exposure characteristics described (groups, number of subjects, duration and level)	Y	41 male chlorine-alkali workers who had been exposed for 5 to 27 years. Mercury concentrations in blood (inorganic, organic, total) and urine were measured.
Statistical analysis conducted	Y	Paired student's t-tests

Results of Prescreen	(Y/N)	Comments
Inclusion in Critical Review	Y	Endpoint and exposure are relevant.

Epidemiological Study Pre-screening Form

Reference:	Ngim, C.H., Foo, S.C., Boey, K.W., and J. Jeyaratnam. 1992. Chronic neurobehavioral effects of elemental mercury in dentists. <i>Br. J. Ind. Med.</i> 49 : 782 - 790.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	
Inhalation exposure	Y	Occupational exposure to Hg ⁰ vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Exposure to an average personal air Hg ⁰ concentration of 0.014 mg/m ³ (0.0007-0.042 mg/m ³). TWA for a mean of 5.5 years.
Endpoint relevance (renal/neuro/immuno)	Y	Neurobehavioural evaluation: visual reproduction, bender gestalt, logical memory, block design, seashore rhythm and profile of mood tests. Intelligence tests.

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	To measure early changes in neurobehavioural performance among dentists occupationally exposed to mercury vapour at concentrations of less than 0.05 mg/m ³ .
Study method described	Y	Methodology well described.
Control(s) Used	Y	54 controls with no history of Hg exposure.
Exposure characteristics described (groups, number of subjects, duration and level)	Y	98 dentists (38 female, 60 male) exposed to an air Hg ⁰ level of 0.008 to 0.049 mg/m ³ .
Statistical analysis conducted	Y	Analysis of covariance, regression analysis

Results of Prescreen	(Y/N)	Comments
Inclusion in Critical Review	Y	Exposure and endpoint are relevant.

Epidemiological Study Pre-screening Form

Reference:	Liang, Y.-X., Sun, R.-K., Sun, Y., Chen, Z.-Q., and L.-H. Li. 1993. Psychological effects of low exposure to mercury vapour: Application of a computer-administered neurobehavioural evaluation system. <i>Environ. Res.</i> 60 : 320 - 327.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	
Inhalation exposure	Y	Occupational exposure to Hg° vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Low exposure to Hg° (current level: 0.033 mg/m ³) for at least 2 uninterrupted years (mean 10.4 years).
Endpoint relevance (renal/neuro/immuno)	Y	Neurobehavioural and mood evaluation

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	Assessment of the psychological effects of low exposure to Hg vapour using a computer-administered neurobehavioural evaluation system and to validate the system for neurotoxicity screening.
Study method described	Y	Methodology well described.
Control(s) Used	Y	97 non-exposed workers
Exposure characteristics described (groups, number of subjects, duration and level)	Y	88 workers (19 male, 69 female). Mercury concentration in urine was 0.024 (+/- 0.058) mg/L.
Statistical analysis conducted	Y	Student's t-tests; significant level was set at 0.05.

Results of Prescreen	(Y/N)	Comments
Inclusion in Critical Review	Y	Endpoint and exposure relevant.

Epidemiological Study Pre-screening Form

Reference:	Fawer, R.F., DeRibaupierre, U., Guillemin, M.P., Berode, M., and M. Lobe. 1983. Measurement of hand tremor induced by industrial exposure to metallic mercury. <i>Br. J. Ind. Med.</i> 40 : 204 - 208.
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Primary Criteria	(Y/N)	Comments
Primary literature	Y	
Inhalation exposure	Y	Occupational exposure to Hg ⁰ vapour.
Exposure Identified Note: May be specific (e.g. concentration and duration of exposure measured for each individual) or more general (e.g. range of exposure, low vs. high).	Y	Mean duration of exposure was 15.3 years with a time-weighted average (TWA) personal exposure of 0.026 mg/m ³ .
Endpoint relevance (renal/neuro/immuno)	Y	Neurological

Secondary Criteria	(Y/N)	Comments
Study objectives clearly defined	Y	Development of an analysis method for hand tremors at rest and under stress, as well as to relate the results of analysis to industrial exposure to metallic mercury.
Study method described	Y	Methodology well described.
Control(s) Used	Y	25 male workers from the same factories, but never exposed. Average blood and urine [Hg] were 16.6 µmol/L and 3.4 µmol/mol creatinine, respectively.
Exposure characteristics described (groups, number of subjects, duration and level)	Y	26 male workers exposed daily to Hg ⁰ vapour (see above). Average blood and urine [Hg] were 41.3 µmol/L and 11.3 µmol/mol creatinine, respectively.
Statistical analysis conducted	Y	Student t-tests, multiple regression

Results of Prescreen	(Y/N)	Comments
Inclusion in Critical Review	Y	Endpoint and exposure are relevant.