

unisanté

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Case study: Chemical pollutants - Assessment



Assessment in a company (fictive case)

- Coffee decaffeination company (in powder form)
- Hot solvent extraction (methylene chloride)
- Batch operation
- Closed circuit extraction area
 - solvent recycling
 - opening (maintenance, cleaning)
- 15 employees in the hall (multipurpose work)

Methylene chloride:

- Central nervous system effects, skin and respiratory irritant
- TWA: 50 ppm or 180 mg/m³; IDHL 2300 ppm

Assessment in a company (fictive case)

Is the work situation admissible (exceeding the limit value)?

- What intervention strategy should be adopted?
- What to measure, how ?
- How many measurements?

Assessment in a company (fictive case)

What to measure, how?

- all the workers in the hall are considered to be a HEG
- integrated measurement, representative over 8 hours
activated carbon tubes SKC 226-01
individual measurements

How many measurements?

- according to EN >10 measurements
- application of the INRS strategy
- 3x3 measurements

Possible additional investigations

- continuous measurement of CH_2Cl_2 during exposure operations
- skin exposure, caffeine, noise...

Assessment in a company (fictive case)

Measurement strategy

- 3 different periods investigated
- different workers (randomly)
- integrated measurement, representative over 8 hours

Results

Conc. [ppm]
1.019
31.243
25.270
26.007
10.150
21.138
16.557
28.261
8.030

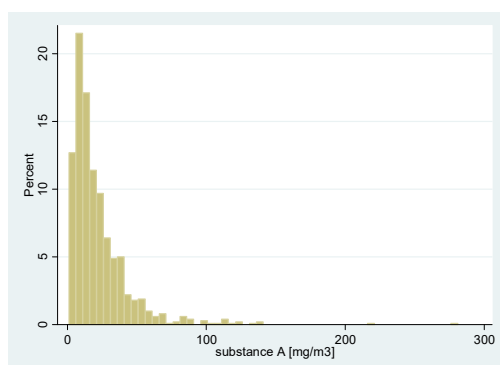
Diagnosis ?

Data analysis (Altrex)

L'hypothèse de distribution log-normale est :	REJETEE
L'hypothèse d'homogénéité du groupe d'exposition est :	ACCEPTEE
La variabilité des mesures est :	ACCEPTABLE
Probabilité de dépassement de la valeur limite :	11.53 %
- Intervalle de confiance (p= 70 %) :	5.25 % - 24.16 %
Moyenne arithmétique :	18.63 ppm
Moyenne arithmétique (hypothèse log-normale) :	24.54 ppm
- Intervalle de confiance (p= 70 %) :	16.90 - 51.27 ppm
Les tests statistiques n'invalident pas l'hypothèse de groupe d'exposition homogène	
Ecart-type géométrique :	2.95
L'hypothèse de distribution log-normale est :	REJETEE
Possible exceedance of the TWA	

Initial distribution (n=1000)

- Distribution
 - Lognormal, geometric mean 15 mg/m³,
 - Arithmetic mean 22 mg/m³
 - GSD 2.3, 95% 57.87 mg/m³



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Altrex diagnosis (n=200)

Cumulative frequencies

