Air Inter-Laboratory Comparisons (ILC): sampling and analyses

For more than 25 years, Ineris has been organising Inter-Laboratory Comparisons (ILC) to improve sampling and analysis practices in the field of air: stack emissions, indoor air and now workplace air. Inter-Laboratory Comparisons are a key tool of quality control and participation in these comparisons is necessary for accredited laboratories.

Automatic samplings and analyses

- Compare sampling practices :
  - test the conformity of materials and practices
  - identify results dispersion sources
  - propose improvements to benchmarks.
- Estimate individual and collective performance level of participants.
- Demonstrate the equivalence of an alternative measurement method to a reference method (EN 14793): implemented upon request.

Analyses

- Improve the quality of analytical method implementation.
- Allow participants to judge the accuracy of their results in relation to reference values or assigned values and evaluate their repeatability.
- Obtain a satisfactory comparability of results coming from different laboratories responsible for monitoring releases into air.

Stack emissions into the atmosphere

- Capacity to accommodate 12 participants simultaneously.
- **Real matrices:** atmospheres generated from combustion gas (natural gas, light fuel-oil or biomass), with or without dust, that can be heated, moistened or spiked with various pollutants.

Testing bench

cofrac COMPARAISONS INTERLABORATOIRES
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Scope available on www.cofrac.fr

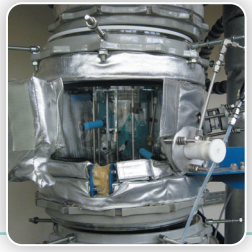
ILC in the testing bench:

- Evaluation of automatic methods (on-line): NO_x, CO, CO_2, O_2, CH_4, total COV, non-methane COV.
- Evaluation of manual methods (sampling): total dust, HCl, NH_3, SO_2, humidity.

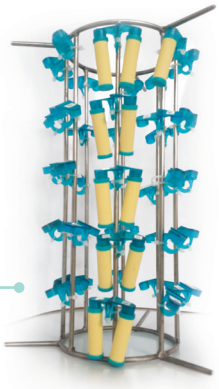
Analytical ILC:

- HCl, NH_3, SO_2, HF, HAP, metals,
- Gas and particle phase: absorption solution, filters, resins,... exposed to combustion gases produced in the testing bench.
- Dust by gravimetry*: filter and rinsing solution

Indoor air



Exposure chamber



Rack for diffusive sampling supports

Analytical ILC (diffusive sampling supports):

- Formaldehyde
- BTEX (benzene, toluene*, ethylbenzene*, xylenes*)

- Preparation of testing materials in an exposure chamber to simulate a real matrix.
- Atmospheres generated in controlled environmental conditions.
- Exposure concentrations close to indoor air guide values.

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* Not accredited parameters

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Air Inter-Laboratory Comparisons (ILC): sampling and analyses

Workplace air:

- Concentration levels between 1 and 200% of OEL (French Occupational Exposure Levels)

Analytical ILC:

- Metals (Cd, Cr, Cu, Ni, Pb) – Mercury
- Inorganic acids (HF, HBr, HCl, H_3PO_4, HNO_3, H_2SO_4)
- BTEX (benzene, toluene, ethyl benzene, xylenes)
- Acetaldehyde, formaldehyde
- Methanol - Ammonia

Analysis laboratory

Inter-laboratory Comparisons 2024

Matrix	Programme	Fee	Date
Stack emission **Analyses**	**Dust by gravimetry*** (filter and rinsing solution)	503 € BT	May
	Gaseous hydrochloric acid (absorption solution subjected to gaseous effluents)	669 € BT	May
	Gaseous hydrofluoric acid (absorption solution subjected to gaseous effluents) **and particles** (filter and dust)	1.174 € BT	May
	Gaseous metals (absorption solution subjected to gaseous effluents) **and particles** (filter and dust): As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Se, Tl, V, Zn	1.998 € BT	May
	Polycyclic Aromatic Hydrocarbons (filter and dust): Benzo[a]anthracene, Benzo[k]fluoranthene, Benzo[b]fluoranthene, Benzo[a]pyrene, Dibenzo[a,h]anthracene, Benzo[g,h,i]perylene, Fluoranthene, Indeno[1,2,3-c,d]pyrene	914 € BT	May
	Gaseous sulphur dioxide (absorption solution subjected to gaseous effluents)	669 € BT	May
	Gaseous ammonia (absorption solution subjected to gaseous effluents)	669 € BT	May
Stack emission **Sampling**	**Implementation of methods of HCl, NH_3, SO_2 and water vapor concentrations measurement**	Consult us	June - July
Workplace air **Analyses***	**Ammonia** on quartz filter	344 € BT	March
	Mercury on Hydrar® tube	344 € BT	March
	Metals (Cd, Cr, Cu, Ni, Pb) on quartz fibre filter	705 € BT	March & Sept.
	Inorganic acids (HF, HBr, HCl, H_3PO_4, HNO_3, H_2SO_4) on quartz fibre filter	747 € BT	March & Sept.
	BTEX (benzene, toluene, ethyl benzene, xylenes) on activated carbon support	843 € BT	March & Sept.
	Aldehydes (formaldehyde, acetaldehyde) on silica tubes coated with 2,4-dinitrophenylhydrazine	986 € BT	March & Sept.
	Methanol (silica gel support)	510 € BT	Sept.
Indoor air **Analyses**	**BTEX** (benzene, toluene*, ethylbenzene*, xylenes*) sampled on diffusive sampling tubes spiked by exposure to atmospheres generated in exposure chamber	Not proposed in 2024	
	Formaldehyde sampled on diffusive sampling tubes spiked by exposure to atmospheres generated in exposure chamber	Not proposed in 2024	
Ambient air **Analyses***	**PAH** (Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Dibenzo[a,h]anthracene, Indeno[1,2,3,c-d]pyrene) on filters	1.799 € BT	Sept.

* Not accredited parameters

The documents relating to the test can be downloaded from the Ineris site under the tab:
https://comparaisons-interlaboratoires.ineris.fr

Ineris's accreditation for ILC organisation can be found at: **http://www.cofrac.fr**
COFRAC Certificate n°1-2291.

Contact :
prestations-ineris@ineris.fr

Ineris
Institut national de l'environnement industriel et des risques
Parc Technologique Alata - BP 2 - 60550 Verneuil-en-Halatte Tél. +33 (0)3 44 55 66 77 - ineris@ineris.fr

www.prestations.ineris.fr

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