

First EC-JRC PAHs inter-laboratory comparison on PM10 quartz filters

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Executive Summary

This report presents the results of the first inter-laboratory comparison for PAHs analysed on quartz filters carried out by the JRC between April and December 2010. Seventeen national reference laboratories participated in this exercise. Four different filters representing winter and summer periods in two different locations (Madrid and Prague) and two blanks were tested during the exercise. 15 PAHs were considered for analysis from phenanthrene to benzo(g,h,i)perylene, including benzo(a)pyrene.

In general, the results of the exercise showed median overall uncertainties ranging from 10 to 90 %, depending on the compound and the analysed concentration. Median benzo(a)pyrene overall uncertainty ranged between 30 and 50 %, increasing with the decrease of the concentration. The exercise demonstrates the validity of the current methodology for organising PAHs interlaboratory comparison exercises on PM10 filters. Laboratories exhibited better performance in the analysis of those compounds where reference material was found on the market. The need for implementing a consistent traceability system for measurements is deduced from the systematic biases associated with laboratory behaviour.

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Nomenclature and abbreviations

ABUM: Amt der oberösterreichischen Landesregierung. Abteilung:Umweltschutz AEA : AEA Technology APA-LRA: Agência Portuguesa do Ambiente AQUILA: Air Quality Reference Laboratories ASE: accelerated solvent extraction AWEL: Gewässerschutzlabor Kanton Zürich

BaA: benzo(a)anthracene BaP: benzo(a)Pyrene BaP-D: benzo(a)pyrene deuterated BeP: benzo(e)pyrene DBahA: dibenzo(a,h)anthracene DBahA-D: dibenzo(a,h)anthracene deuterated BbjkFlu: benzo(b,j,k)fluoranthene BbFlu: benzo(b)fluoranthene, BghiPe: benzo(g,h,i)perylene BghiPer-D: benzo(g,h,i)perylene deuterated BjFlu: benzo(j)fluranthene BkFlu: benzo(k)fluoranthene blank_i: is the system blank level associated with the analysis of the filter i. (eq. 2)

Chr: chrysene

 C_i : concentration reported by laboratory i

 \overline{C}_i^* : robust concentration average (eq. 3)

 C_{lab} : average concentration of the reported values by a laboratory (eq. 10) C_{ref} : reference concentration (eq. 10)

EEA: Executive Environmental Agency EERC: Estonian Environmental Research Centre

$$E_n = \frac{C_{lab} - C_{ref}}{\sqrt{U_{lab}^2 + U_{ref}^2}}, \text{ eq } (9)$$

EPA-ie: Environmental Protection Agency, Ireland ERLAP : European Reference Laboratory of Air Pollution ESG: Scientifics part of Environmental Scientifics Group EU: European Union

F21: code for PM10 Prague summer filter

F3: code for PM10 Madrid summer filter

F10: code for PM10 Madrid winter filter

F30: code for PM10 Prague winter filter

 $f_{i,j}$: concentration calculated for the injection j of the filter i (eq. 1)

 $\overline{f_{i,i}}$ is the average value of all injections and filters

FLD: Fluorescence detector

Flu: Fluoranthene

FMI: Laboratory of Air Chemistry, Finnish Meteorological Institute

GC-MS: gas chromatography mass spectrometer

HPLC: High Performance Liquid Chromatography

IndPy: indeno(1,2,3-cd)pyrene IndPy-D: indeno(1,2,3-cd)pyrene deuterated I.S.: internal standard ISCIII: Instituto de Salud Carlos III ISSeP: Institut Scientifique de Service Public IVL Swedish environmental institute

KAL : Chemical Analytical Laboratory, Slovenia Environment Agency LANUV: Landesamt für Natur, Umwelt und Verbraucherschutz NRW

m: number of filters (eq. 2)

n: number of injections (eq. 1) n.a.: non available NERI: National Environmental Research Institute

OEU: overall expanded uncertainty (eq. 10) *ou*: overall uncertainty (eq. 1)

p: number of input laboratories, (eqs. 3, 4, 6, 7)
Per: perylene
Per-D: perylene deuterated
PM: Particular matter
PM10: particular matter under 10 μm
PM2.5: particular matter under 2.5 μm
PM1: particular matter under 1 μm
PAHs: polycyclic aromatic hydrocarbons
Phe: phenanthrene
Phe-D: phenanthrene deuterated
Phe-D: phenanthrene deuterated
Py-D: pyrene deuterated
Py: pyrene

QAQC: quality assurance quality control TPhe: triphenylene

stdev(): standard deviation s^{*}: standard deviation of the robust concentration average (eq. 3) u_{bias} : standard uncertainty of the bias (eq. 7) u_{ci} : uncertainty of the reported value from laboratory I (eq. 7). u_{cl} : uncertainty of the calibration and the reference value (eq. 1) U_{lab} : expanded uncertainty for the reported value (eq. 9) U_{ref} : expanded uncertainty for the reference value (eq. 9)

VMM: Vlaamse Milieumaatschappij

Z: random variable of two tails statistic for normal distribution (eq. 8).

Introduction

The pollution caused by particulate matter (PM) is one of the critical issues of the current air quality policy. Numerous studies relate mortality and morbidity with the pollution levels of particulate matter in air. In this context, an appropriated characterization of the particulate is of importance to provide a better health indicator for air quality than PM10, PM2.5 or PM1. Furthermore, this could help in the identification and quantification of the compounds responsible for health disorders.

At EU level, the Directive 2004/107/EC already focuses on the analysis of heavy metals and polycyclic aromatic hydrocarbons (PAHs) as compounds to be analysed in PM10 as responsible for PM toxicity and carcinogenic characteristics. In the case of the PAHs, an annual limit value has been established for benzo(a)pyrene (BaP) (carcinogenic to humans according to the last upgrade of the IARC) as a marker for PAH in particles. Furthermore, other PAHs are recommended to be measured: benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluranthene, benzo(k)fluoranthene, indeno(1,2,3cd)pyrene and dibenzo(a,h)anthracene.

The tedious methodologies linked to the quantification of PAHs imply relatively high uncertainties in the reported analytical results. This is reflected in the level of expanded uncertainty defined in the afore-mentioned Directive, being for BaP in PM10 or in total deposition, 50 % and 70 %, respectively. Furthermore, the minimum time coverage for these measurements is reduced up to 14 -33 % for fixed measurements.

The implementation of analytical methods that are traceable and QAQC tested becomes an asset for this sort of analysis. Furthermore, the execution of inter-laboratory comparisons represents an important tool for the demonstration of laboratory traceability, showing competence and identifying weak points in their analytical methods.

This report shows the results of the first inter-laboratory comparison of PAHs on PM10 filters carried out at European level among the Air Quality Reference Laboratories in Europe (AQUILA).

Inter-laboratory comparison strategy

This inter-laboratory comparison focussed on the evaluation of the analytical performance of participating laboratories. Any consideration regarding sampling technique or monitoring strategic approach is out of the discussion in this report. Instead, uncertainties, biases or inaccuracies should be linked to analytical issues and to the traceability of the measurements.

Although the testing of laboratory traceability and analytical performance could easily be carried out by means of reference material (i.e. NIST-16492 or CRM-ERM@CZ-100), this may not reflect the response of a laboratory to real samples collected on PM10 filters. For this reason, this exercise was performed on the basis of real samples on PM10 quartz filters.

Participating laboratories

Sixteen laboratories from AQUILA have participated in this inter-laboratory comparison. Names of the laboratories and people involved are listed in Table 1.

Table 1 List	of participating	laboratories
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IVL Swedish environmental institute Environmental Research Department of Environmental Protection Agency, EPA Agência Portuguesa do Ambiente Vlaamse Milieumaatschappij - Labo Gent VMM - Labo Gent Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav Estonian Environmental Research Centre	IVL EPA-lt APA-LRA VMM LANUV AWEL CHMU	Sweden Lithuania Portugal Belgium Germany Switzerland Czech Republic	Annika Potter Erika Rehngren Daiva Pockeviciute Paula Viana João Matos Eric Wauters Peter Van Caeter Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova Jiri Novak
Environmental Protection Agency, EPA Agência Portuguesa do Ambiente Vlaamse Milieumaatschappij - Labo Gent VMM - Labo Gent Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	APA-LRA VMM LANUV AWEL CHMU	Portugal Belgium Germany Switzerland Czech Republic	Daiva Pockeviciute Paula Viana João Matos Eric Wauters Peter Van Caeter Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Environmental Protection Agency, EPA Agência Portuguesa do Ambiente Vlaamse Milieumaatschappij - Labo Gent VMM - Labo Gent Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	APA-LRA VMM LANUV AWEL CHMU	Portugal Belgium Germany Switzerland Czech Republic	Paula Viana João Matos Eric Wauters Peter Van Caeter Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Vlaamse Milieumaatschappij - Labo Gent VMM - Labo Gent Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	VMM LANUV AWEL CHMU	Belgium Germany Switzerland Czech Republic	João Matos Eric Wauters Peter Van Caeter Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
- Labo Gent VMM - Labo Gent Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	LANUV AWEL CHMU	Germany Switzerland Czech Republic	Peter Van Caeter Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Landesamt für Natur, Umwelt und Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	AWEL	Switzerland Czech Republic	Roland De Fleurquin Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	AWEL	Switzerland Czech Republic	Ulrich Pfeffer Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Verbraucherschutz NRW AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	AWEL	Switzerland Czech Republic	Dieter Gladtke Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
AWEL Gewässerschutzlabor Kanton Zürich Cesky hydrometeorologicky ustav	CHMU	Czech Republic	Anja Olschewski Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Cesky hydrometeorologicky ustav	CHMU	Czech Republic	Robert Gehrig Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
Cesky hydrometeorologicky ustav	CHMU	Czech Republic	Andreas Wyss Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
			Nicole Imboden Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
			Helena Placha Jan Abraham Eva Paznerova Irina Nikolova
			Jan Abraham Eva Paznerova Irina Nikolova
	FERC		Eva Paznerova Irina Nikolova
Estonian Environmental Research Centre	FERC		Irina Nikolova
Estonian Environmental Research Centre	FERC		
Estonian Environmental Research Centre	FERC		JIII NOVAK
L'storiari Ermiorimentari research Centre		Estonia	Toivo Truuts
	LENO	LStoria	Juhan Tamm
National Environmental Research Institute, Aarhus	NERI	Denmark	Rossana Bossi
University		Deninark	Russalia Bussi
Executive Environmental Agency	EEA	Bulgaria	Borislav Zdravkov
			Ognian Georgiev
Institut Scientifique de Service Public	ISSeP	Belgium	HENGESCH Valerie
			CADET Alain
			LEBRUN Muriel
Environmental Protection Agency	EPA-ie	Ireland	Barbara O'Leary
EPA			Lin Delaney
			Simon O'Toole
Amt der oberösterreichischen Landesregierung. Abteilung:Umweltschutz	ABUM	Austria	Adolf Schinerl
Chemical Analytical Laboratory, Slovenian Environment Agency	KAL	Slovenia	Gregor Muri
Laboratory of Air Chemistry, Finnish	FMI	Finland	Hannele Hakola
Meteorological Institute			Mika Vestenius
			Heidi Hellen
AEA Technology Scientifics part of Environmental Scientifics Group	AEA ESG	UK	Christopher Connolly Shane O'Leary
Coloranos part or Environmental Ocientinos Oroup	200	UN	Joanne Baker
Instituto de Salud Carlos III	ISCIII	Spain	Rosalía Fernandez Patier
Joint Research Centre	ERLAP	EC	E. Grandesso
European Reference Laboratory for Air Pollution			K. Kowalewski P. Pérez Ballesta

Sampling programme and schedule

The need for real PM10 samples to carry out this exercise was discussed inside the AQUILA. The sampling of PM10 should represent typical operational network monitoring conditions. Two Laboratories Instituto de Salud Carlos III from Spain and the "Cesky hydrometeorologicky ustav" from the Czech Republic voluntarily offered to act as sampling laboratories and were finally responsible for the PM10 sampling.

The sampling was performed according to a defined protocol (see Annex I) by means of Andersen high volume PM10 samplers on quartz filters (Whatman QM-A). Filters were heat-treated prior to sampling and each seasonal batch of samples was sent to the JRC for characterisation.

The sampling was performed during two different seasonal periods, covering the possible range of concentrations that characterised the sampling locations: summer (June-August 2009) and winter (November-January 2010). The corresponding samplers were sited in background monitoring stations of "Sinesio Delgado" (Madrid) and "Libus" (Prague).

Sections of the filters were distributed among participants during the second week of May 2010, with a data collection deadline, beginning of September 2010. The package contained one filter for each season and location, and two blanks (one from each sampling location).

The comparison was based on the amount of compound quantified on the filter, which should be expected to be equivalent to typical amounts found in low volume sampler filters.

Participating laboratories received the filters together with a "Guide to operation" (included in Annex I). They were requested to provide information concerning the analytical method and the uncertainty evaluation of the measurements. Laboratories were requested to report a minimum of 3 replicate injections for each sample.

A list of fifteen different PAHs was provided from which seven of them were marked as priority (See table 2).

Single compound	Compounds
1	Phenanthrene
2	Anthracene
3	Fluoranthene
4	Pyrene
5	Benzo(a)anthracene
6	Chrysene
7	Benzo(b)fluoranthene
8	Benzo(j)fluoranthene
9	Benzo(k)fluoranthene
10	Benzo(e)pyrene
11	Benzo(a)pyrene
12	Perylene
13	Indeno(1,2,3,-c,d)pyrene
14	Dibenzo(a,h)anthracene
15	Benzo(g,h,i)perylene
Combination of isomers	Compounds
А	*Chrysene+triphenylene
С	*Benzo(b.j,k)fluoranthene

Table 2.– List of compounds to be quantified on the filter

In highlighted print priority compounds for the inter-laboratory comparison

Filters management, characterisation and homogeneity

Whatman QM-A Quartz microfiber filter [20.3x 25.4 cm (8x 10 in). Cat. No. 1851 865] were used for sampling in the Andersen high volume PM10 samplers. These filters provide a sampling area of circa 406 cm² to be subdivided into smaller filter sections corresponding to low volume filter samples of diameter 4 cm.

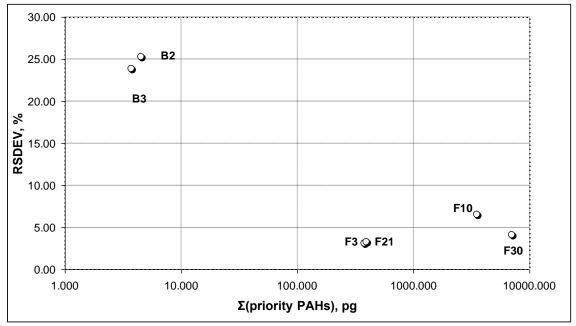
The high volume sampled filters that arrived directly from the sampling site were kept in a freezer (at -16 °C) until the preparation for distribution among participating laboratories. Twenty filter samples of 4 cm diameter were available from each high volume sampled filter. They were systematically cut by means of a mould specifically designed for this purpose (See Figure 1).



Figure 1.– Mould and tools for the subdivision of the high volume sampled filter

The low volume dimension filters were carefully prepared for mailing according to a particular procedure that considered the individual packing and sealing of each sample (Detail of this packing can be observed in Annex I - Guide to operation).

The filters selected for the inter-laboratory comparison were previously tested for homogeneity by means of a thermal desorption methodology, which allowed the quantification of small sections of filters with diameters from 2.5 to 6 mm (Van Drooge et al.).



* Priority PAHs: benzo(a)anthracene, benzo(b,j,k)fluoranthene, benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene

Figure 2.– Relative standard deviation with respect to priority compounds.

The random analysis of a minimum four small filter sections by thermal desorption shows content relative standard deviations compatible with the needs for the comparison exercise. The relative standard deviations associated with the sum of the priority compound concentrations for the sampled filters ranged between 3.2 and 6.5 %. This is in agreement with previous studies of homogeneity on Andersen high volume sampled filters (A. Baeza et al.).

Table 3 shows sampling parameters and average values for the main ambient variables registered during the sampling of the PM10 in the corresponding locations. As expected PM10 and PM2.5 winter concentrations were higher than those for summer, whilst the highest levels were found in Prague during winter.

Filter code	F3	F21	F10	F30	B2	B3
Location	Madrid	Prague	Madrid	Prague	Madrid	Prague
Sampling Period	6-8/7/2009	27-28/8/2009	25-27/11/2009	21-22/11/2009	-	-
Sampling volume, m ³	3090	1590	3190	1708	-	-
Temperature, °C	24.9	22.8	9.2	7.28	-	-
Relative Humidity, %	32	63	90	87	-	-
PM10, μg/m ³	30	24.3	21	89	-	-
PM2.5, μg/m ³	11	16.7	n.a.	64	-	-
O ₃ , ppb	37	70	n.a	5	-	-

Table 3.– Sampling variables for the PM10 collection

* n.a.: non available

With the exception of the winter Prague filter, where the concentration of PAHs were significantly high, with concentrations of benzo(a)pyrene of about 7.5 ng/m³, other filters were much lower, 0.2 ng/m³ for the winter filter in Madrid and around 50 pg/m³ of BaP for the summer period in both locations. Graphs from Figure 3 show the estimated PAH air concentration levels during the corresponding sampling days and locations.

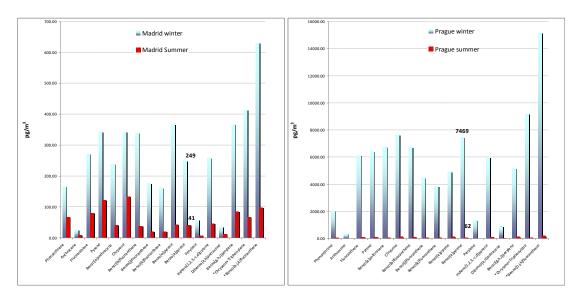
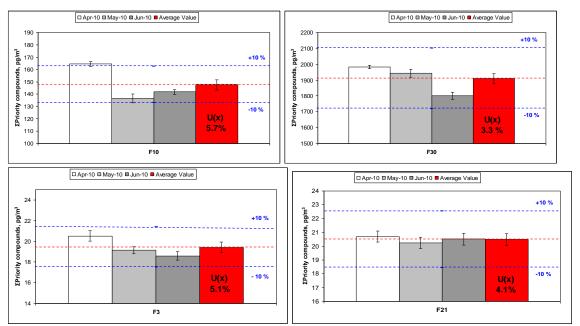


Figure 3.- PAHs air concentration levels during sampling

Filter stability

JRC retained three 4 cm diameter filters for analysis from each sampling batch. One set of filters was sent abroad and return to JRC by courier, simultaneously to the filters of the other participants. The other two filters from the same sampling batch were analysed one month before and one month after the circulating filters. Those filters were stored in freezer.

The analysis of these filters showed variation within ± 10 % of the average value, therefore validating the stability of the filters for the exercise. The sum of the priority PAHs quantified on the filters are shown in Figure 4. It is noted the lower uncertainty associated with filters from Prague when compared to those from Madrid. Similar behaviour was also noted during the homogeneity tests, which could be due to a more volatile composition of the Madrid filters in comparison to Prague or a breakthrough on the Madrid filters caused by the sampling volume being double that of Prague.



* Priority PAHs: benzo(a)anthracene, benzo(b,j,k)fluoranthene, benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene

Figure 4.– Analysis of the filters before and after the exercise.

Analytical Methods

Each participant was free to choose the analytical method according to their own experience. As a consequence, there were multiple combinations of different separation techniques, detectors, extraction systems, solvents, extraction time, clean up and other analytical parameters. No statistical differences could be associated with a specific technique for extraction or analysis. Table 4 shows the different techniques and relevant analytical conditions used by the participating laboratories.

LABORATORY	ANALYTICAL METHOD	COLUMN	EXTRACTION	SOLVENT	TIME	CLEANUP	CORRELAT ION	INTERNAL STANDARD
IVL	HPLC /FLD	CHROMSPHERE PAH (VARIAN)	SOXLHET	PENTANE-ACETONE	24 H	SILICA GEL MERK	Multipoint- Linear	b,b-binapthyl
EPA-LT	HPLC /FLD	SUPELCOSILITM LC-PAH	SOXLHET	HEXANE-ACETONE	4 H	SPE CARTRIGE	Multipoint- Linear	external extandard
APA-LRA	HPLC /FLD	C18 REVERSE PHASE	SOXLHET	ACETONITRILE	16 H	-	Multipoint- Linear	external extandard
VMM	HPLC /FLD	ZORBAX ECLIPSE PAH	ASE	DICHLOROMETHANE	35 MIN	-	Multipoint- Linear	external extandard
LANUV	HPLC /FLD	ZORBAX ECLIPSE PAH	ULTRASONIC	TOLUENE	24 H	CHROMAB ON	Multipoint- Linear through origin	external extandard
AWEL	GC-MS	DB5-30 M	SOXLHET	CYCLOHEXANE- ISOOCTANE- ACETONE	4 H	-	Multipoint- Linear	1,11 dibromodecane
CHMU	GC-MS	DB5-30 M	SOXLHET	METHANOL- DICHLOROMETHANE	1 H	SILICA GEL SUPELCO	Multipoint- Linear through origin	Phe-D, Chry-D, Per-D
EERC	GC-MS	DB5-30 M	SOXLHET	CYLCOHEXANE	16 h	-	Multipoint- Linear	Py-D, Per-D
NERI	GC-MS	DB5-30 M	n.a.	DICHLOROMETHANE	n.a.	-	Multipoint- Linear	BaA-D, Chry-D, BaP-D, Per-D, BghiPer-D, DBahA-D
EEA	GC-MS	DB-XLD- 30 M	ULTRASONIC	DICHLOROMETHANE	1 H	SILICA GEL	Multipoint- Linear	Phe-D, Chry-D, Per-D
ISSeP	GC-MS	DB-17	SOXHLET	CYCLOHEXANE- DIETHYLETHER	16 H	-	Multipoint- Linear	Phe-D, Chry-D, BaP-D
EPA-ie	GC-MS	DB5-30 M	ULTRASONIC	DICHLOROMETHANE	n.a.	FLORASIL	Multipoint- Linear	Chry-D
ABUM	GC-MS	DB5-60 M	ASE	CYCLOHEXANE	30 MIN	SILICA GEL	Multipoint- Linear	corresponding deuterated
KAL	GC-MS	DB5-30 M	MICROWAVE	HEXANE-ACETONE	45 MIN	SILICA	Multipoint- Linear	Phe-D, Py-D, BahA-D, BaP-D, IndPy-D
FMI	GC-MS	DB5-50 M	SOXLHET	DICHLOROMETHANE	8 H	FLORISIL	Multipoint Quadratic	Phe-D, Chry-D, DBahA- D, Per-D
AEA/ESG	GC-MS	ZB-5 30M	ASE	n.a.	n.a.	SPE CARTRIGE	Multipoint- Linear	I.S. non expecified
ERLAP	GC-MS	DB-17 30 M	MICROWAVE	ACETANE-HEXANE	30 MIN	SPE CARTRIGE/ CUPS	Multipoint- Linear	corresponding deuterated
ERLAP#T	GC-MS	DB-17 30 M	THERMA	L DESORPTION			Multipoint- Linear	corresponding deuterated

Table 4.– Analytical method used by the participating laboratories

25 % of the participating laboratories used liquid chromatography and FLD detection whilst the rest of the laboratories used gas chromatography separation and mass spectrometry. For gas chromatography separation, a 30 m DB5 was the most frequently used column; other phases such as DB17 or longer lengths were rare. Soxhlet was the most common method for extraction used by 8 laboratories, three laboratories used ultrasonic extraction and another three accelerated soxhlet extraction, 2 laboratories extracted the filter by microwave, whilst only one laboratory used thermal desorption. There was no agreement in the solvent or time for extraction (acetonitrile, pentane, acetone, cyclohexane, isooctane, dichloromethane, toluene and mixtures of these solvents were used by laboratories even with the same extraction technique), with times from minutes to 24 hours. Clean-up was applied by most of the laboratories. All analysis were performed by multipoint calibration. Internal standard method was applied to all GC-MS analysis, while only one laboratory used internal standard for HPLC.

Analytical uncertainties from participating laboratories

Participating laboratories were requested to estimate the associated expanded uncertainties of their analytical results. These values are given in Table 12. Description of the uncertainty evaluation provided by each laboratory is given in annex I.

Several laboratories provided uncertainties on the basis of data from method validations and analysis of reference material, including the bias as an additional source of uncertainty. On the other hand, the 3 analyses per sample requested can only provide an idea about the analytical repeatability, but other sources of uncertainty should be considered in the calculations such as: calibration and standard preparation, blank level, reproducibility, desorption efficiencies, known biases, etc. Furthermore, as the exercise contains different filters with different concentration levels, it is expected that the analytical uncertainty will depend on the concentration level. The lower the analysed concentration, the higher the uncertainty associated with the quantified value. Similarly, the analytical uncertainty will be different from compound to compound, depending on its analytical reproducibility and response, volatility, desorption efficiency, etc. Nevertheless, these aspects not always considered in the reported uncertainties.

Analytical uncertainties from the ERLAP

ERLAP participated in the exercise by analysing the filters using two different techniques: solvent extraction with GC-MS and thermal desorption with GC-MS analysis.

The evaluation of the concentration and the associated budget uncertainty, reported by JRC, was based on the results of the averaging of three filter samples analysed in triplicate by liquid extraction and gas chromatography. The reproducibility uncertainties of these analyses were combined with others sources of uncertainties derived from the standards, calibration and system blank. In a similar way, uncertainty for the thermal desorption analyses was based on the reproducibility analysis of a number of cuts

randomly distributed around the whole high volume filter, plus the corresponding sources of uncertainties related to standards, calibration and system blank. This uncertainty evaluation did not consider uncertainties attributed to biases with respect to the analysis of reference materials.

The overall uncertainty, ou, was calculated as follows:

$$ou = \sqrt{\sum_{i=1}^{m} \left(\frac{stdev(f_{i,j})}{\sqrt{n}}\right)^2} + u_{cl}^2 + u_{blank}^2$$
(1)

Where:

 $u_{cl} = 0.025 \cdot \overline{f_{i,j}}$ as an approach value for the uncertainty of the calibration and the reference standard (see referencies: B.L. Vand Drooge et al. J. Chromatogr. A 1216 (2009) 4030-4039)

$$u_{blank} = \sqrt{\left(\frac{stdev(blank_i)}{\sqrt{m}}\right)^2 + \overline{blank_i^2}}$$
(2)

 $f_{i,j}$ is the concentration calculated for the injection j of the filter i.

n, is the number of injections (j=1 to n)

m, is the number of filters (i=1 to m)

 $\overline{f_{i,i}}$ is the average value of all injections and filters

*blank*_i, is the system blank level associated with the analysis of the filter i.

Reference values

Due to the nature of this kind of inter-laboratory comparisons, the reference value was determined on the basis of the robust average results from the best performance laboratories. The selection of a best performance laboratory was based on the number of outliers reported by each laboratory with respect to a robust average calculated on the basis of the ISO-13528. Therefore, robust average, \overline{C}_i^* , and standard deviation, s^* , of the p input laboratories, are derived from a convergence process of the following equation:

$$\overline{C}_{i}^{*} = \frac{\sum C_{i}^{*}}{p}$$
(3)
$$s^{*} = 1.134 \cdot \sqrt{\frac{\sum (C_{i} - \overline{C}_{i}^{*})^{2}}{(p-1)}}$$
(4)

Where recurrent values are calculated from these equations:

$$C_{i}^{*} = \begin{cases} \overline{C}_{i}^{*} - 1.5 \cdot s^{*} & \text{if} \quad C_{i} < \overline{C}_{i}^{*} - 1.5 \cdot s^{*} \\ \overline{C}_{i}^{*} + 1.5 \cdot s^{*} & \text{if} \quad C_{i} > \overline{C}_{i}^{*} + 1.5 \cdot s^{*} \\ C_{i} & \text{otherwise} \end{cases}$$
(5)

The initial values are calculated as:

$$C_{i}^{*} = \text{median of } C_{i} (i = 1, 2, ...p)$$

$$s^{*} = 1.483 \cdot \text{median of } \left| C_{i} - \overline{C}_{i}^{*} \right| (i = 1, 2, ...p)$$
(6)

By assuming normal distribution for the bias, $C_i - \overline{C}_i^*$, the associated standard uncertainty is estimated as:

$$u_{bias} = \sqrt{\frac{(1.25 \cdot s^*)^2}{p} + u_{c_i}^2}$$
(7)

where u_{c_i} is the uncertainty of the reported value from laboratory i.

The null hypothesis for a bias equal to zero can be evaluated using the two tails statistical test of normal distribution of the random variable, Z, defined as:

$$Z = \frac{C_i - \overline{C}_i^*}{u_{bias}}$$
(8)

In light of this statistic, where Z values higher than 3 were considered as outliers, a first evaluation of results was carried out. The output of this first evaluation in terms of overall reported data and outliers are shown in Table 5.

Laboratories with an overall ratio outlier/reported higher than 0.25 were excluded from the estimation of the robust average value, i.e. the reference value of the inter-laboratory comparison. Robust average values from the best performance laboratories and associated expanded uncertainties (k=2) are given in Table 6. Those values were considered as reference values for the final evaluation purpose of the exercise.

Laboratory	Compounds	6		
	reported	outliers	% Reported	outlier/reported, %
IVL	47	11	68	25
EPA-LT	36	9	52	25
APA-LRA	40	9	58	23
VMM	44	9	64	20
LANUV	32	1	46	3
AWEL	29	8	42	28
CHMU	44	25	64	57
EERC	40	3	58	8
NERI	36	11	52	31
EEA	40	24	58	60
ISSeP	52	21	75	40
EPA-ie	31	16	45	52
ABUM	60	8	87	13
KAL	40	4	58	10
FMI	44	8	64	18
AEA/ESG	49	30	71	61
ERLAP LIQUID	64	0	93	0
ERLAP THERMAL	64	2	93	3

Table 5.– Outliers versus reported data for all compounds and participating laboratory

Table 6.– Reference values and associated expanded uncertainties.

	F2 ²	1	F3		F10		F30	
	Amount, ng	EU (%)	Amount, ng	EU (%)	Amount, ng	EU (%)	Amount, ng	EU (%)
Phenanthrene	3.9	39.9	6.1	23.0	15.4	20.2	101.3	12.7
Anthracene	0.6	63.9	0.7	40.8	2.4	30.0	16.0	19.8
Fluoranthene	4.2	11.8	7.2	12.1	25.3	13.3	304.9	7.5
Pyrene	4.6	15.9	11.1	10.6	31.9	15.2	320.2	7.7
Benzo(a)anthracene	2.2	29.9	3.7	36.2	22.2	16.1	336.0	5.2
Chrysene	5.1	57.5	12.0	101.3	31.9	31.4	381.5	18.3
Benzo(b)fluoranthene	5.0	18.6	3.3	55.7	31.6	18.0	335.5	12.0
Benzo(j)fluoranthene	2.2	5.9	1.8	5.5	16.4	15.3	223.7	24.7
Benzo(k)fluoranthene	2.2	35.8	1.7	29.1	15.0	24.1	191.3	12.7
Benzo(e)pyrene	5.5	75.2	3.9	65.4	34.1	33.1	245.0	3.8
Benzo(a)pyrene	2.9	16.7	3.7	19.2	23.2	26.6	373.0	7.1
Perylene	0.5	57.0	0.6	25.4	5.3	45.2	65.0	7.1
Indeno(1,2,3,-c,d)pyrene	4.2	14.5	4.2	16.1	24.0	11.4	298.7	11.2
Dibenzo(a,h)anthracene	1.3	66.3	1.1	87.1	3.3	36.7	43.7	15.4
Benzo(g,h,i)perylene	5.4	19.9	7.7	20.1	34.2	14.0	258.9	14.9
*Chrysene+triphenylene	3.7	30.6	5.9	38.4	38.6	16.2	457.7	14.9
*Benzo(b.j,k)fluoranthene	8.7	28.9	8.8	36.9	58.8	15.9	756.2	16.0

Evaluation of the laboratory results

Laboratory results were treated according to ISO 5725 to have representative repeatability and reproducibility values for the inter-comparison exercise. Furthermore, in order to evaluate the average results reported by the different laboratories the *En* number as recommended by ISO/EC Guide 43-1:1997, A.2.1.4 item E., was calculated:

$$E_{n} = \frac{C_{lab} - C_{ref}}{\sqrt{U_{lab}^{2} + U_{ref}^{2}}}$$
(9)

where U_{lab} and U_{ref} are the expanded uncertainties for the reported and reference value, respectively.

 E_n number expresses the validity of the expanded uncertainty estimate associated with each result. The critical value for E_n number is 1. E_n numbers higher than 1 identify results that are incompatible with the reference value after allowing for the stated uncertainties. The overall evaluation of the laboratory results should consider both bias and E_n value, because a low En value could be due to a large stated uncertainty. Therefore, to indicate performance an overall expanded uncertainty (OEU), representing the sum of the expanded uncertainty of the reported result, U_{lab} , and the absolute value of its bias with respect to the reference value, is used; the relative OEU % being calculated according to the following expression:

$$OEU \% = \left[\left(U_{lab} / \overline{C_{lab}} \right) + \left(/ \overline{C_{lab}} - C_{ref} \right) \right] / \overline{C_{ref}} \right] 100$$
(10)

Results and discussion

All the 15 PAHs under consideration in the reporting list were not fully reported by all the laboratories. According to Figure 5, compounds like BaP, BaA, BghiPe, (Chr and Chr+TPhe) and IndPy were reported by 90 % of the laboratories. While 80 % of laboratories reported Phe, Anth, DBahA, Flu, Py and only 60 % of the laboratories reported results for BbFlu, BkFlu, and BbjkFlu. As a result less than 30 % of the laboratories provided results for BjF, Per and BeP.

These reporting percentages are indicative of difficulties linked to the analytical method as well as the capability of these laboratories to analyse these compounds. It is also noted that the highest percentages of reporting correspond to those compounds mentioned in the EU directive 2004/107/EC, in which the laboratories have invested most of their analytical effort.

The blank filters analysed by the participants show the noise level associated with the analytical methodology. Figure 6 shows the average value of the blank level (B) quantified by the participating laboratories in the two filters, as well as the value defined by the best performance laboratories (Blank REF). It is noted that blank levels are generally higher for the more volatile PAHs, which acts as a potential source of contamination for the material of analysis.

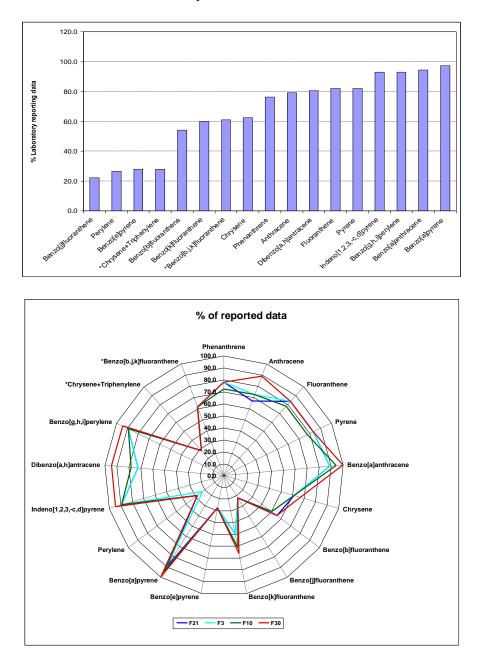


Figure 5.- Percentage of laboratories reporting data for each compound

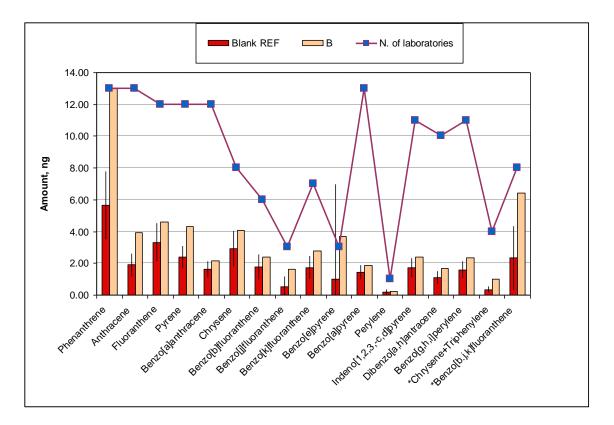


Figure 6.– Average PAH levels for the blank filters of the comparison exercise

Figure 7 shows the amount of compounds quantified in each filter in comparison with the one determined on the blanks by the best performance laboratories. It is noted that filters F21 and F3, corresponding to the summer period in Prague and Madrid, respectively, were probably close to the quantification limit of the method, in particular for the lighter compounds like phenathrene or anthracene where the amounts quantified on the blank and on the filter were similar.

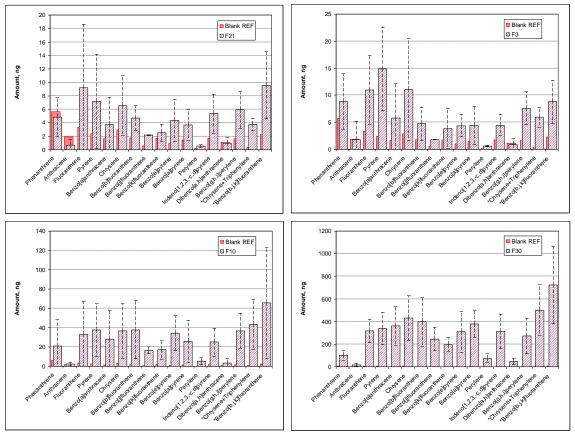
Overall results of the inter-laboratory comparison can be represented in terms of bias with respect to the reference value or deviation of the reference value with respect to the laboratory, when the reference value is higher. This can be represented as follows:

bias
$$(\%)$$
 = deviation $(\%)$ if Laboratory value > Reference value (11)

or

$$bias(\%) = -\frac{\frac{deviation(\%)}{100}}{1 + \frac{deviation(\%)}{100}} \cdot 100 \qquad \text{if Laboratory value} < \text{Reference value} \qquad (12)$$

Consequently, the sign '+' and '-' makes reference to the 'over' and 'under' estimation of the reference value.



|-----| standard deviation of the inter-laboratory average value

Figure 7.– Blanks versus sampled Filters

Figures 8 to 11 shows the results of the inter-laboratory comparison for the different filters and analysed compounds. The figures include outliers and are expressed in terms of deviation. These figures show how some laboratories are systematically over- or under-estimating the reference concentration. On the other hand it is evident that the scattering of the results increase with the decrease in the amount of compounds on the filter.

In order to calculate reproducibility and repeatability for the inter-laboratory exercise, this data was treated according to ISO5725. The results are represented in Figures 12 and 13. These figures show the increase of the repeatability and reproducibility values with the decrease in the concentrations on the filters. Repeatability values over 10 % were observed in compounds like anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, perylene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene for the lower concentrations. Reproducibility values over the 50 % were systematically obtained for the two summer filters with the lower concentrations. The best reproducibility values were obtained with the filter of highest concentration with average values of circa 20 %.

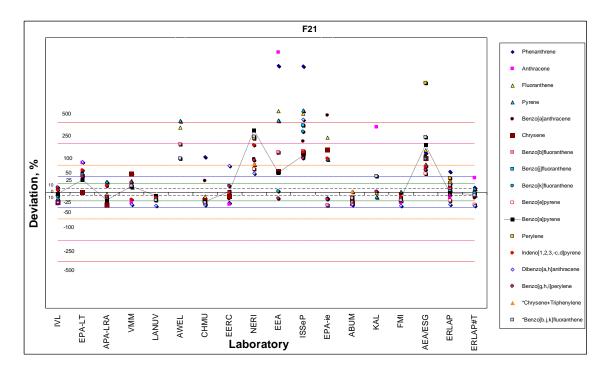


Figure 8.- Inter-laboratory results - Filter F21 - Prague summer period

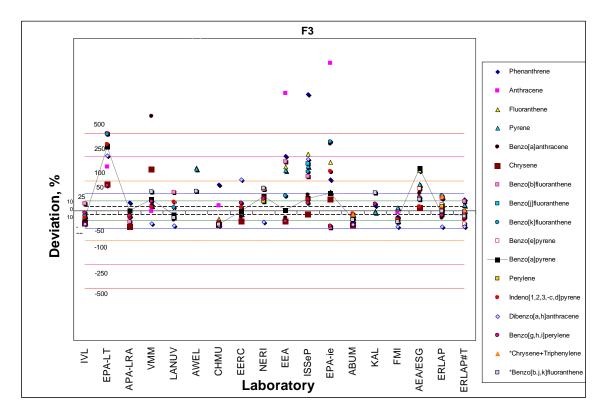


Figure 9.- Inter-laboratory results - Filter F3 - Madrid summer period

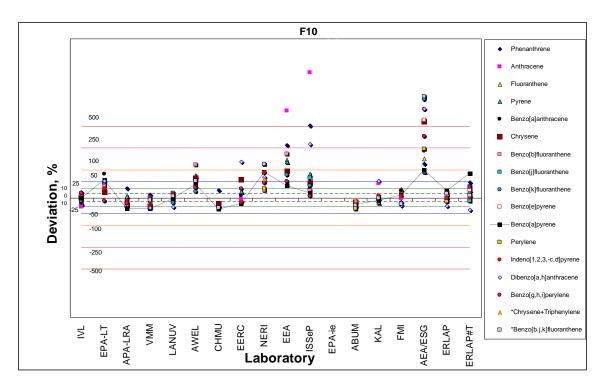


Figure 10.- Inter-laboratory results - Filter F10 - Madrid winter period

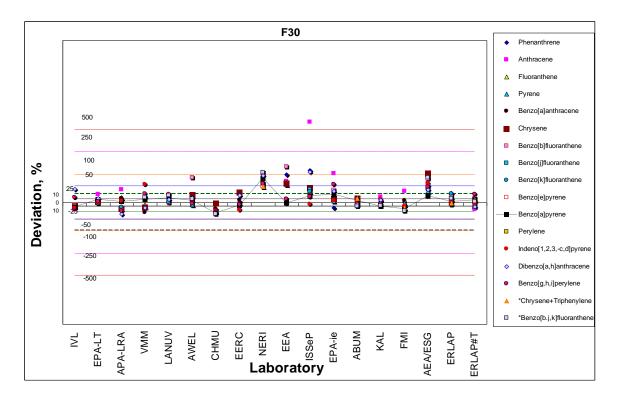


Figure 11.- Inter-laboratory results - Filter F30 - Prague winter period

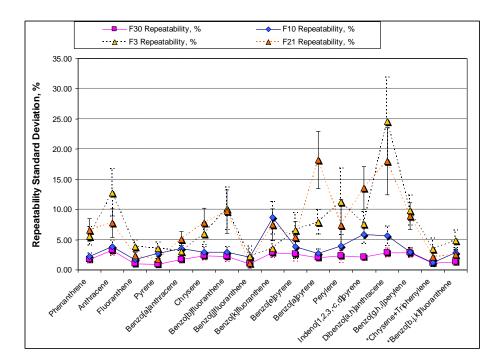


Figure 12.- Repeatability of the inter-laboratory comparison exercise

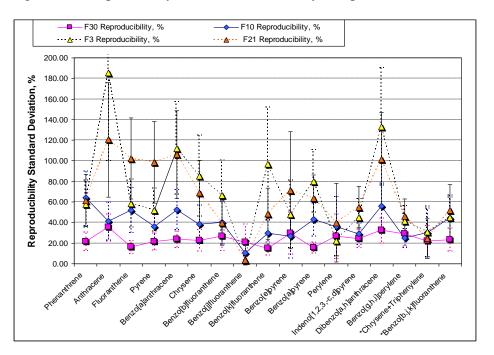


Figure 13.- Reproducibility of the inter-laboratory comparison exercise

Figure 14 represents the median for the repeatability and reproducibility values of all the analysed compounds. In this figure it is possible to see how the repeatability and reproducibility improve with the increase in the concentration levels on the filter. Such an improvement is more significant for the reproducibility values. The robustness of the method is consequently enhanced at higher concentrations.

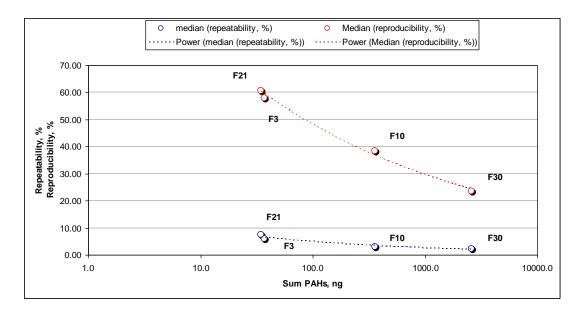


Figure 14.- Median reproducibility and repeatability values versus PAH concentration

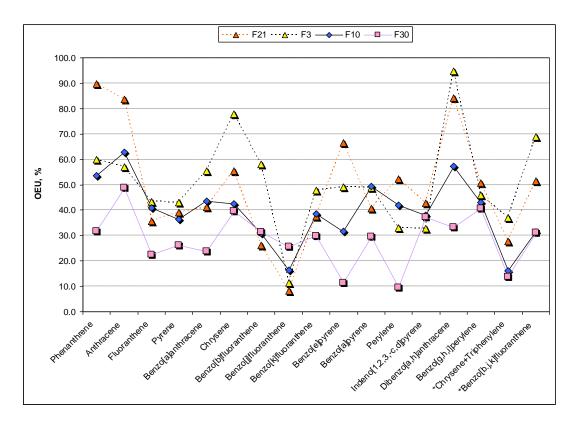


Figure 15.- Median overall expanded uncertainty - excluding outliers

An overall analytical performance for the analysis of each compound, on the basis of this exercise, is given by the median value of the overall expanded uncertainty (OEU), excluding outliers, determined by laboratory according to equation (11). These values are represented in figure 15 for the four filters of the inter-laboratory comparison. The highest concentration filter (F30) shows the lower OEUs, ranging from 10 to 50 %. Those

with uncertainties increase with decreasing concentration on the filter. Therefore, from average OEU of circa 29 % for F30 increase to circa 40 % for F10, 51 % for F3 and 52 % for F21 (see table 7).

The results of the inter-laboratory comparison exercise have been evaluated according to ISO 13528 to test the proficiency of each laboratory. All this data was collected from Tables 8 to 12, which shows the average values, expanded uncertainties, bias, En values, and OEU. In addition, an evaluation according to the criteria of En value has been established: warning En>1 and Action En>1.5. En values higher than one imply underestimations of the associated uncertainty or a significant bias of the reported value with respect to the reference's one, not covered by the associated uncertainties.

In general, En values are lower for the higher concentrations, i.e. there is probably a general underestimation of the uncertainty values for the lower concentrations. Excluding outliers, median En values are generally under 1, which represent robust results. Only for a few PAHs (phenanthrene, fluranthene and pyrene) median values were occasionally higher than 1 for the lower concentrations. (see Figure 16).

median OEU, %	F21	F3	F10	F30
Phenanthrene	89.8	59.9	53.6	31.7
Anthracene	83.8	57.0	62.9	48.8
Fluoranthene	35.6	43.3	41.0	22.4
Pyrene	39.1	43.0	36.4	26.2
Benzo(a)anthracene	46.1	54.4	43.6	23.7
Chrysene	55.3	77.9	42.5	39.7
Benzo(b)fluoranthene	26.2	58.0	30.8	31.4
Benzo(j)fluoranthene	8.3	11.3	16.4	25.7
Benzo(k)fluoranthene	37.6	47.8	38.6	29.7
Benzo(e)pyrene	66.5	49.2	31.6	11.4
Benzo(a)pyrene	45.8	50.2	49.2	29.7
Perylene	52.2	32.9	41.9	9.4
Indeno(1,2,3-c,d)pyrene	47.4	41.8	38.1	37.1
Dibenzo(a,h)anthracene	91.9	94.8	57.3	33.2
Benzo(g,h,i)perylene	50.6	45.9	43.0	40.6
*Chrysene + triphenylene	27.8	37.0	16.1	13.6
*Benzo(b,j,k)fluoranthene	51.5	69.0	31.4	31.3

Table 7.– Inter-laboratory median overall expanded uncertainties for compounds without outliers

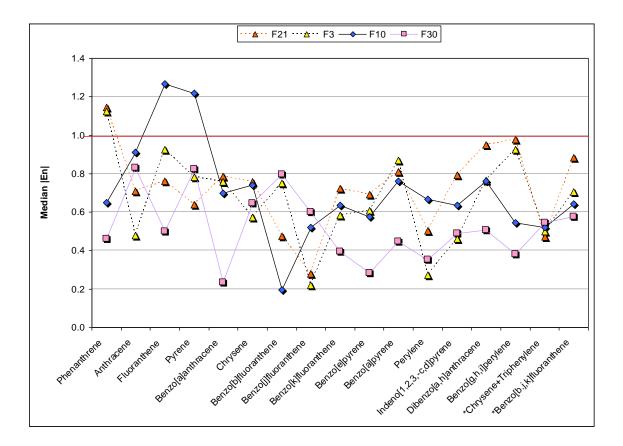


Figure 16.- Median of the absolute En values

Histograms of the results of compounds for the four filters under comparison can be found in the Annex. It is noted that compounds like perylene, benzo(j)fluranthene and benzo(e)pyrene were reported by a very limited number of laboratories. Therefore, no generic conclusions can be draw from these compounds.

REPORTED RESULT	1	IVL				LANU				NERI			I		ABUM				E	ERLAP		
ng		-		-30	F21 F3	F1	0 F	30	F21 F3	F10) F:	30	F21	F3	F10		30		-3	F10	F3	
Phenanthrene	2.6	4.3	11.6	87.9										1.4	3.8	10.2	101.2	6.6		8.1	17.0	128.2
Anthracene	0.3	0.5	1.6	12.0										0.2	0.5	1.4	14.6	0.5		0.6	2.2	15.6
Fluoranthene	4.0	6.1	22.5	263.7										3.1	5.5	19.9	308.8	4.8		7.4	27.1	340.9
Pyrene	3.7	9.8	27.7	281.3										3.2	9.2	24.6	308.7	4.9		2.9	32.9	351.6
Benzo[a]anthracene	1.3		18.7	267.3	1.4	2.6	20.4	333.3	5.2	5.1	42.2	544.3		1.7	2.0	18.3	343.1	2.2	2	2.9	24.6	339.1
Chrysene	2.9	5.6	31.9	352.0										2.8	3.6	28.2	422.9					
Benzo[b]fluoranthene	4.7	4.0	31.8	306.3	4.5	5.1	30.2	333.7										5.5		4.5	31.9	389.9
Benzo[j]fluoranthene							18.3	266.7										2.2		1.9	15.8	211.6
Benzo[k]fluoranthene	1.9	1.5	13.7	154.0	1.6	1.8	12.8	194.8						1.5	1.2	10.6	174.1	2.8		2.4	17.8	238.2
Benzo[e]pyrene									10.1	6.4	41.4	366.3		2.9	2.9	22.4	252.3	3.8		4.4	31.7	241.8
Benzo[a]pyrene	2.7	2.8	23.0	327.7	2.6	3.3	22.7	419.3	14.2	5.1	44.1	678.0		2.4	2.7	18.0	391.8	2.8		3.4	27.9	380.7
Perylene									2.2	0.8	6.7	105.0		0.4	0.5	2.8	61.6	0.8		0.7	4.8	68.0
Indeno[1,2,3,-c,d]pyrene	4.5	3.3	25.9	247.3	3.4	5.1	26.3	365.2	14.3	5.6	45.0	586.0		3.5	3.8	19.7	289.9	4.8		4.3	27.1	301.2
Dibenzo[a,h]anthracene	0.7	0.5	3.8	60.8	0.4	0.3	2.1	47.1	2.1	0.6	5.6	84.7		0.5	0.4	2.7	41.6	0.5		0.2	2.3	48.8
Benzo[g,h,i]perylene	6.1	7.3	38.7	295.7					12.4	10.1	50.1	411.3		3.9	5.7	28.0	283.9	4.9		6.8	33.4	243.0
*Chrysene+Triphenylene									7.7	10.1	62.1	681.0		3.8	5.4	36.4	507.5	4.9		8.4	42.8	454.2
*Benzo[b.j,k]fluoranthene					6.0	6.9	61.2	904.9	36.5	15.0	136.5	1587.3		7.0	6.1	43.0	684.1	10.5		8.8	65.6	839.8
REPORTED RESULT		EPA-I				AWEL				EEA					KAL					RLAP#T		
ng	F21	F3 F	10 F	-30	F21 F3	F1	0 F	30	F21 F3	F10		30	F21	F3	F10		30	F21 F		F10	F3	
Phenanthrene									101.4	21.5	57.9	203.6		3.9	6.9	14.7	105.7	4.3		7.9	22.8	103.8
Anthracene	1.2	2.0	3.4	19.6	1			16.7	20.6	11.2	21.5	26.9		3.0		3.5	18.5	0.8		0.3	4.4	12.4
Fluoranthene	1				22.6	19.5	42.9	300.0	34.6	20.0	65.5	485.8		4.1	7.1	23.0	307.0	4.6	٤	B.1	31.0	334.8
Pyrene	1				28.9	29.4	56.0	300.3	29.3	28.3	79.5	501.3		3.9	10.7	27.6	310.7	5.0		2.6	39.1	350.7
Benzo[a]anthracene	3.6	22.4	40.3	341.3			30.1	348.7	6.0	2.9	41.0	522.6				20.7	328.0			2.7	27.5	333.7
Chrysene	5.1	22.3	36.9	388.7	1		52.6	464.0	8.9	7.3	62.2	611.7										
Benzo[b]fluoranthene	7.7	20.0	43.0	329.0	17.4		72.3	618.0	14.2	10.4	95.6	813.5						4.9	2	4.2	30.8	370.6
Benzo[j]fluoranthene					1		-			-								2.1		1.8	15.0	192.9
Benzo[k]fluoranthene	3.4	10.1	21.8	185.7	1		17.5	208.7	2.2	2.4	26.5	186.6						1.9		1.6	16.7	210.4
Benzo[e]pyrene	2.4		5		1													2.0		1.8	41.2	240.8
Benzo[a]pyrene	4.0	16.2	36.3	401.7	1		32.5	393.3	4.7	3.7	31.6	368.2				21.4	336.7	2.0		3.2	42.9	395.6
Perviene	4.0	10.2	50.5				02.0	000.0	4.7	0.7	01.0	000.2				24	000.7	0.5		0.5	7.0	65.5
Indeno[1,2,3,-c,d]pyrene	7.4	19.3	30.0	298.3	1		31.1	306.0								25.5	323.3	3.8		3.3	23.9	280.8
Dibenzo[a,h]anthracene	2.8	3.8	5.0	298.3	1		31.1	49.8								25.5 5.0	323.3	0.4		3.3 0.2	23.9	280.8
				48.6 265.0	1		42.0		12	4.6	E1 7	202.2		E	0.0							38.0
Benzo[g,h,i]perylene	8.2	13.7	31.3	265.0	1		43.9	253.0	4.3	4.6	51.7	282.3		5.5	9.0	33.2	249.7	4.8 3.5		7.0 6.0	44.5 42.5	317.2 486.4
*Chrysene+Triphenylene *Benzo[b.j.k]fluoranthene	1																					
Benzolb.i.kifluoranthene																						
		4.5.4	D.4		20.7	13.8	89.7	826.7		100.0				13.1	13.5	58.7	687.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT		APA-L				CHML	J			ISSeP					FMI			7.9	7	7.5	62.4	774.0
REPORTED RESULT		F3 F	10 F	-30	F21 F3	CHML F1	0 F	30	F21 F3	F10		30	F21	F3	FMI F10	F	30	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene	F21 5.0		10 F 19.7	74.3	F21 F3 9.7	CHML F1 11.1	0 F 18.7	30 81.3	100.5	F10 90.5	95.7	225.0		F3 2.6	FMI F10 5.0	F 13.5	30 91.4	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene	5.0	F3 F 7.3	10 F 19.7 2.0	74.3 22.0	F21 F3 9.7 0.4	CHMU F1 11.1 0.8	0 F 18.7 1.6	30 81.3 12.0	100.5 62.3	F10 90.5 46.4	95.7 56.1	225.0 116.8		F3 2.6 0.3	FMI F10 5.0 0.7	F 13.5 2.4	30 91.4 21.1	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene	5.0 4.0	F3 F 7.3 7.3	10 F 19.7 2.0 22.0	74.3 22.0 266.3	F21 F3 9.7 0.4 3.7	CHMU F1 11.1 0.8 5.4	0 F 18.7 1.6 18.2	30 81.3 12.0 245.7	100.5 62.3 32.3	F10 90.5 46.4 26.7	95.7 56.1 44.3	225.0 116.8 392.8		F3 2.6 0.3 4.2	FMI 5.0 0.7 7.5	F 13.5 2.4 30.2	30 91.4 21.1 327.0	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene	5.0	F3 F 7.3 7.3 10.0	10 F 19.7 2.0 22.0 33.3	74.3 22.0 266.3 364.0	F21 F3 9.7 0.4 3.7 2.7	CHMU F1 11.1 0.8 5.4 5.6	0 F 18.7 1.6 18.2 25.2	30 81.3 12.0 245.7 212.9	100.5 62.3 32.3 37.7	F10 90.5 46.4 26.7 31.1	95.7 56.1 44.3 57.9	225.0 116.8 392.8 418.3		F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene	5.0 4.0 6.0	F3 F 7.3 7.3 10.0 3.0	10 F 19.7 2.0 22.0 33.3 19.7	74.3 22.0 266.3 364.0 370.3	F21 F3 9.7 0.4 3.7 2.7 3.0	CHMU F1 11.1 0.8 5.4 5.6 2.3	0 F 18.7 1.6 18.2 25.2 18.3	30 81.3 12.0 245.7 212.9 268.7	100.5 62.3 32.3 37.7 8.2	F10 90.5 46.4 26.7 31.1 5.4	95.7 56.1 44.3 57.9 27.8	225.0 116.8 392.8 418.3 417.1		F3 2.6 0.3 4.2	FMI 5.0 0.7 7.5	F 13.5 2.4 30.2	30 91.4 21.1 327.0	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene	5.0 4.0 6.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0	74.3 22.0 266.3 364.0 370.3 304.0	F21 F3 9.7 0.4 3.7 2.7	CHMU F1 11.1 0.8 5.4 5.6	0 F 18.7 1.6 18.2 25.2	30 81.3 12.0 245.7 212.9	100.5 62.3 32.3 37.7 8.2 14.2	F10 90.5 46.4 26.7 31.1 5.4 10.9	95.7 56.1 44.3 57.9 27.8 46.2	225.0 116.8 392.8 418.3 417.1 546.2		F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	5.0 4.0 6.0	F3 F 7.3 7.3 10.0 3.0	10 F 19.7 2.0 22.0 33.3 19.7	74.3 22.0 266.3 364.0 370.3	F21 F3 9.7 0.4 3.7 2.7 3.0	CHMU F1 11.1 0.8 5.4 5.6 2.3	0 F 18.7 1.6 18.2 25.2 18.3	30 81.3 12.0 245.7 212.9 268.7	100.5 62.3 32.3 37.7 8.2 14.2 14.6	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9		F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 6.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3	F21 F3 9.7 0.4 3.7 2.7 3.0	CHMU F1 11.1 0.8 5.4 5.6 2.3	0 F 18.7 1.6 18.2 25.2 18.3	30 81.3 12.0 245.7 212.9 268.7	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7	F21	F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	5.0 4.0 6.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0	74.3 22.0 266.3 364.0 370.3 304.0	F21 F3 9.7 0.4 3.7 2.7 3.0	CHMU F1 11.1 0.8 5.4 5.6 2.3	0 F 18.7 1.6 18.2 25.2 18.3	30 81.3 12.0 245.7 212.9 268.7	100.5 62.3 32.3 37.7 8.2 14.2 14.6	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9	F21	F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 6.0 2.0 4.0	F <u>3</u> F <u>3</u> 7.3 7.3 10.0 3.0 2.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2	30 81.3 12.0 245.7 212.9 268.7 368.9	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0	F21	F3 2.6 0.3 4.2 4.6 2.1	FMI F10 5.0 0.7 7.5 11.9 2.8	F 13.5 2.4 30.2 39.5 26.7	30 91.4 21.1 327.0 315.9 353.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]yrene Benzo[b]yrene	5.0 4.0 6.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3	F21 F3 9.7 0.4 3.7 2.7 3.0	CHMU F1 11.1 0.8 5.4 5.6 2.3	0 F 18.7 1.6 18.2 25.2 18.3	30 81.3 12.0 245.7 212.9 268.7	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7	F21	F3 2.6 0.3 4.2 4.6	FMI 5.0 0.7 7.5 11.9	F 13.5 2.4 30.2 39.5	30 91.4 21.1 327.0 315.9	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[byrene	5.0 4.0 6.0 2.0 4.0	F <u>3</u> F <u>3</u> 7.3 7.3 10.0 3.0 2.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2	30 81.3 12.0 245.7 212.9 268.7 368.9	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0	F21	F3 2.6 0.3 4.2 4.6 2.1	FMI F10 5.0 0.7 7.5 11.9 2.8	F 13.5 2.4 30.2 39.5 26.7	30 91.4 21.1 327.0 315.9 353.7	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]yrene Benzo[b]yrene	5.0 4.0 6.0 2.0 4.0	F <u>3</u> F <u>3</u> 7.3 7.3 10.0 3.0 2.0 2.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2	30 81.3 12.0 245.7 212.9 268.7 368.9	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0	F21	F3 2.6 0.3 4.2 4.6 2.1	FMI F10 5.0 0.7 7.5 11.9 2.8	F 13.5 2.4 30.2 39.5 26.7	30 91.4 21.1 327.0 315.9 353.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene	5.0 4.0 6.0 2.0 4.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 3.7 3.3	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 2.4	30 91.4 21.1 327.0 315.9 353.7 302.5	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene	5.0 4.0 6.0 2.0 4.0 2.0	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 3.7	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 309.7	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2	7.9	7	7.5	62.4	
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene	5.0 4.0 6.0 2.0 4.0 2.0 5.0	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 3.7 3.3	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 309.7 22.0	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4	0 F 18.7 1.6 18.2 26.2 18.3 26.2 11.2 14.2 2.1	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9 8.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 2.4	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4	7.9	7	7.5	62.4	
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Parylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene	5.0 4.0 6.0 2.0 4.0 2.0 5.0	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 3.7 3.3	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 309.7 22.0	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4	0 F 18.7 1.6 18.2 26.2 18.3 26.2 11.2 14.2 2.1	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9 8.4	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 24.9 2.4 27.0	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a,h]aptylene "Chrysene+Triphenylene "Chrysene+Triphenylene	5.0 4.0 6.0 2.0 4.0 2.0 5.0	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 3.7 3.3 6.7	10 F 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 309.7 22.0	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5	CHML F1 11.1 0.8 5.6 2.3 4.4 1.6 2.4 0.4 3.7 3.6	0 F. 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9 8.4	F1(90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5 9.2	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2	F 13.5 2.4 39.5 26.7 24.9 24.9 2.4 27.0 32.5 47.3	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene	5.0 4.0 6.0 2.0 4.0 2.0 5.0 4.7	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 3.7 3.3 6.7	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 309.7 22.0 182.0	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.7	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5 9.2 EPA-ie	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC	F 13.5 2.4 39.5 26.7 24.9 24.9 24.9 2.4 27.0 32.5 47.3	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[ajanthracene Chrysene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[c], hjorviene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a,h]aptylene "Chrysene+Triphenylene "Benzo[b,ikjfluoranthene REPORTED RESULT ng	5.0 4.0 6.0 2.0 4.0 2.0 5.0 4.7 F21	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 F3 F	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 10 F	74.3 22.0 364.0 370.3 304.0 283.3 164.7 384.7 384.7 309.7 22.0 182.0	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3	CHML F1 11.1 0.8 5.6 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EEEC F1	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.9 5.4 4.9 5.4 3.5 9.2 EPA-ie F10	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC F10	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[b,h]luoranthene *Dibenzo[a,h]anthracene Benzo[b,h]luoranthene *Tchrysene+Triphenylene *Benzo[b,j,k]fluoranthene REPORTED RESULT ng Phenanthrene	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 F3 F 7.0	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 10 F 16.8	74.3 22.0 266.3 3064.0 370.3 304.0 283.3 164.7 384.7 384.7 309.7 22.0 182.0	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC F1 4.4	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 14.2 2.1 35.2 0 F 13.8	30 81.3 12.0 245.7 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3	100.5 62.3 32.3 37.7 8.2 14.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5 9.2 EPA-le F10 12.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC	F 13.5 2.4 39.5 26.7 24.9 24.9 24.9 2.4 27.0 32.5 47.3	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[c]byrene Benzo[c]byrene Benzo[c]byrene Benzo[c], h]anthracene Benzo[a, h]anthracene Dibenzo[a, h]anthracene Benzo[a, h]aptyrene Thorysene+Triphenylene "Chrysene+Triphenylene "Chrysene+Triphenylene REPORTED RESULT ng Phenanthrene Anthracene	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3 0.3	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 F <u>3 F</u> 7.0 0.7	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 22.0 28.7 12.0 28.7 16.8 1.4	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 309.7 22.0 182.0 182.0	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2	CHML F1 11.1 0.8 5.4 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC F1 4.4 0.5	0 F 18.7 1.6 18.2 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 2.5 13.8 2.5 13.8 2.5 13.8 2.5 13.8 2.5 13.8 2.5 13.8 2.5 13.5 15.5	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1	F1(90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5 9.2 EPA-ie F1(12.5 22.6	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 85.0 32.8	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 5.2 AEA/ESC F10 15.4	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 24.9 24.9 24.9 24.9 2.4 32.5 47.3 5 5 5 5 5 5	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[b,h]luoranthene Tchrysene+Triphenylene "Benzo[b,i,k]fluoranthene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthrene	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 F21 6.3 0.3 5.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 F <u>3 F</u> 7.0 7.0 7.0 9.2	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 16.8 1.4 23.3	74.3 22:0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 22:0 182:0 182:0 115.1 11.5 291.9	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 F21 F3 2.1 0.2 3.8	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC F1 4.4 0.5 6.6	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9	30 81.3 12.0 245.7 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 17.3	F1(90.5 46.4 26.7 31.1 5.4 10.9 7.4 5.4 4.2 4.9 5.4 3.5 9.2 9.2 F1(12.5 22.6	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 32.8 369.2	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESG F10 15.4 15.4 15.4	F 13.5 2.4 30.2 39.5 26.7 24.9 2.4 27.0 32.5 47.3 5 F 36.5 67.4	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Dibenzo[a,h]anthracene Dibenzo[a,h]anthracene Dibenzo[a,h]anthracene Benzo[b,h]berylene "Chrysene+Triphenylene "Chrysene+Triphenylene Tenzo[b,k]fluoranthene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 F21 6.3 5.6 5.2	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 F3 F F3 F 7.0 0.7 9.2 12.5	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 16.8 1.4 23.3 25.4	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 309.7 22:00 182.0 182.0	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC F1 4.4 0.5 6.6.6 10.2	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2	30 81.3 12.0 245.7 268.7 368.9 214.1 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 306.3	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 17.3 10.7	F1(90.5 46.4 26.7 31.1 5.4 4.2 7.4 5.4 4.2 4.9 5.4 3.5 9.2 EPA-ie F1(22.6 22.6 22.6 17.2	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 85.0 32.8 369.2 333.9	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEAVESC AEAVESC AEAVESC 15.4 18.3 20.5	F 13.5 2.4 30.2 39.5 26.7 24.9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 32.5 47.3 5 F 36.5 67.4 61.5	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b],k]fluoranthene "Benzo[b],k]fluoranthene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[a]anthracene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 0.7 9.2 12.5 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 17.3 10.7 16.1	F10 90.5 46.4 26.7 5.4 5.4 4.2 7.4 5.4 4.9 7.4 4.9 5.4 3.5 9.2 EPA-ie F10 12.5 22.6 22.6 22.2 17.6	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 32.8 369.2 333.9 446.4	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC F10 15.4 18.3 20.5 5.6	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 2.4 27.0 32.5 47.3 F 36.5 67.4 61.5 72.2	30 91.4 21.1 327.0 315.9 353.7 3002.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 461.7	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]ryrene Benzo[a]pyrene Benzo[a]pyrene Perylene Chrysene-Triphenylene "Chrysene-Triphenylene "Chrysene-Triphenylene Fluoranthrene REPORTED RESULT ng Phenanthrene Fluoranthene Pyrene Benzo[a]anthracene Benzo[a]anthracene REPORTED RESULT ng	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 F21 6.3 5.6 5.2	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 F3 F F3 F 7.0 0.7 9.2 12.5	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 16.8 1.4 23.3 25.4	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 309.7 22:00 182.0 182.0	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC F1 4.4 0.5 6.6.6 10.2	0 F 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2	30 81.3 12.0 245.7 268.7 368.9 214.1 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 306.3	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 7.4 13.1 13.1	F1(90.5 46.4 26.7 31.1 5.4 4.2 7.4 5.4 4.2 4.9 5.4 4.2 4.9 5.4 3.5 9.2 EPA-i6 22.6 22.2 17.2 12.5 7 17.5 7	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 392.8 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 85.0 32.8 369.2 333.9 446.4 419.8	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC F10 15.4 18.3 20.5 5.6	F 13.5 2.4 30.2 39.5 26.7 24.9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 2.4 9 32.5 47.3 5 F 36.5 67.4 61.5	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]n.h]anthracene Benzo[b].h]fluoranthene Benzo[b].h]fluoranthene Tchrysene HTriphenylene "Benzo[b].k]fluoranthene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 0.7 9.2 12.5 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 17.3 10.7 16.1	F10 90.5 46.4 26.7 5.4 5.4 4.2 7.4 5.4 4.9 7.4 4.9 5.4 3.5 9.2 EPA-ie F10 12.5 22.6 22.6 22.2 17.6	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 32.8 369.2 333.9 446.4	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC F10 15.4 18.3 20.5 5.6	F 13.5 2.4 30.2 39.5 26.7 24.9 24.9 2.4 27.0 32.5 47.3 F 36.5 67.4 61.5 72.2	30 91.4 21.1 327.0 315.9 353.7 3002.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 461.7	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[c]e,h]anthracene Benzo[c]e,h]anthracene Benzo[c]e,h]anthracene Benzo[c]e,h]anthracene Tebenzob[.k]fluoranthene REPORTED RESULT ng Phenanthrene Fluoranthene Pyrene Benzo[c]anthracene Fluoranthene Pyrene Benzo[c]anthracene Fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 9.2 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 13.1 7.3 10.7 16.1 15.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 4.2 5.4 4.9 5.4 4.2 5.4 4.9 5.4 4.2 9 5.4 3.5 9.2 5.4 3.5 9.2 5.4 3.5 9.2 17.2 17.6 17.7 15.7 0.3	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 333.9 446.4 419.8 445.6	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6 12.2	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 AEA/ESC F10 15.4 18.3 20.5 5.6	24.9 24.9 24.9 24.9 24.9 2.4 27.0 32.5 47.3 5 67.4 61.5 72.2 217.3	30 91.4 21.1 327.0 315.9 353.7 367.2 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 426.3 426.3 426.7 786.0	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b],k]fluoranthene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 9.2 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 13.1 7.3 10.7 16.1 15.3	F1(90.5 46.4 26.7 31.1 5.4 4.2 7.4 5.4 4.2 4.9 5.4 4.2 4.9 5.4 3.5 9.2 EPA-i6 22.6 22.2 17.2 12.5 7 17.5 7	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 392.8 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 85.0 32.8 369.2 333.9 446.4 419.8	F21	F3 2.6 0.3 4.2 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6 12.2 5.1	FMI F10 5.0 0.7 7.5 1.9 2.8 2.7 3.0 0.2 4.6 5.2 F10 15.4 18.3 20.5 5.6 12.9	24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 461.7 786.0 350.7	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[c] b]pyrene Benzo[c] a, 1, c]pyrene Hendenc] Benzo[c] a, 1, c]pyrene Benzo[c] a, 1, j]perylene "Chrysene-Triphenylene "Chrysene-Triphenylene Fluoranthene Pyrene Benzo[c], k]fluoranthene Benzo[c] anthracene Fluoranthene Pyrene Benzo[c] anthracene Fluoranthene Benzo[c] fluoranthene Benzo[b]fluoranthene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 9.2 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 13.1 7.3 10.7 16.1 15.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 4.2 5.4 4.9 5.4 4.2 5.4 4.9 5.4 4.2 9 5.4 3.5 9.2 5.4 3.5 9.2 5.4 3.5 9.2 17.2 17.6 17.7 15.7 0.3	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 333.9 446.4 419.8 445.6	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6 12.2	FMI F10 5.0 0.7 7.5 1.9 2.8 2.7 3.0 0.2 4.6 5.2 F10 15.4 18.3 20.5 5.6 12.9	24.9 24.9 24.9 24.9 24.9 2.4 27.0 32.5 47.3 5 67.4 61.5 72.2 217.3	30 91.4 21.1 327.0 315.9 353.7 367.2 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 426.3 426.3 426.7 786.0	7.9		7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]n]perylene 'Chrysene+Triphenylene "Chrysene+Triphenylene "Benzo[b],k]fluoranthene Benzo[b],k]fluoranthene Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 2.0 4.0 2.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 9.2 33.4	10 F 19.7 7 2.0 2.0 2.0 0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	74.3 22:00 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22:00 182.0 182.0 116.1 11.5 291.9 282.9 282.9 205.3	F21 F3 9.7 0.4 3.7 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 2.1 0.2 3.8 4.5 1.7	CHML F1 11.1 0.8 5.4 5.4 2.3 4.4 1.6 2.4 0.4 3.7 5.6 EERC F1 4.4 0.5 6.6 10.2 3.1	0 0 18.7 16.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4	30 12:0 245:7 212:9 268:7 368:9 214.1 213.4 27:9 154.4 392.7 30 103.3 12:6 303.4 316.3 359.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 13.1 7.3 10.7 16.1 15.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 4.2 5.4 4.9 5.4 4.2 5.4 4.9 5.4 4.2 9 5.4 3.5 9.2 5.4 3.5 9.2 5.4 3.5 9.2 17.2 17.6 17.7 15.7 0.3	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 417.1 546.2 430.9 306.7 249.0 439.3 285.1 93.6 298.8 30 30 85.0 333.9 446.4 419.8 445.6	F21	F3 2.6 0.3 4.2 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 5.6 12.2 5.1	FMI F10 5.0 0.7 7.5 1.9 2.8 2.7 3.0 0.2 4.6 5.2 F10 15.4 18.3 20.5 5.6 12.9	24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 461.7 786.0 350.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[h]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]ryrene Herdeno[1, 3, -c.d]pyrene Denzo[b]ryrene Benzo[b]ryrene Phonsanthrene Phonsanthrene REPORTED RESULT ng Phenanthrene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 F21 F21 C3 5.6 5.2 2.6 8.2	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 VMM F3 F 7.0 0.7 9.2 12.5 33.4 31.3	10 F 19.7 F 2.0 22.0 22.0 22.0 24.0 23.3 19.7 12.0 12.0 22.0 28.7 12.0 28.7 10 F 10 F 16.8 1.4 23.3 25.4 12.2 21.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 320.0 182.0 182.0 182.0 182.0 182.0 309.7 225.0 182.0 182.0 329.4	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F21 F3 0.2 3.8 4.5 1.7 4.5 4.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.6 EERC 4.7 5 6.6 10.2 3.1 7.3	0 F 18.7 1.6 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 37.2 23.4 50.4	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 316.3 359.9 491.8	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.7 10.4 7.4 7.4 7.4 13.1 7.3 10.7 16.1 15.3	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 4.2 5.4 4.9 5.4 4.9 5.4 4.2 5.4 3.5 9.2 5.4 4.2 5.4 3.5 9.2 5.4 3.5 9.2 17.2 17.6 17.7 15.7 0.3 8.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 418.3 418.3 249.0 439.3 249.0 439.3 285.1 93.6 298.8 369.2 333.9 446.4 419.8 456.3 202.7	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 12.2 5.1 9.0	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.6 5.2 AEA/ESC 5.6 12.9 6.4	24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 154.0 25.7 433.3 426.3 426.3 426.3 426.3 426.3 53.6 78.0 78.0 78.0 78.0 78.0 78.0 78.0 78.0	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[ajanthracene Chrysene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[c], bjanthracene Benzo[c], hjanthracene Benzo[c], hjlerylene "Chrysene+Triphenylene "Chrysene+Triphenylene "Chrysene+Triphenylene "Chrysene+Triphenylene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene Benzo[bjfluoranthene	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 F21 F21 C3 5.6 5.2 2.6 8.2	F3 F 7.3 7.3 10.0 2.0 2.0 2.0 3.7 3.3 6.7 VMM F3 F 7.0 0.7 9.2 12.5 33.4 31.3	10 F 19.7 F 2.0 22.0 22.0 22.0 24.0 23.3 19.7 12.0 12.0 22.0 28.7 12.0 28.7 10 F 10 F 16.8 1.4 23.3 25.4 12.2 21.7	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 320.0 182.0 182.0 182.0 182.0 182.0 309.7 225.0 182.0 182.0 329.4	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F21 F3 0.2 3.8 4.5 1.7 4.5 4.5	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.6 EERC 4.7 5 6.6 10.2 3.1 7.3	0 F 18.7 1.6 18.7 1.6 18.2 25.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 37.2 23.4 50.4	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 316.3 359.9 491.8	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 521 5.3 7.7 8.2 14.6 12.3 10.4 7.4 15.1 8.4 13.1	F10 90.5 46.4 26.7 31.1 5.4 10.9 7.4 4.2 5.4 4.9 5.4 4.9 5.4 4.2 5.4 3.5 9.2 5.4 4.2 5.4 3.5 9.2 5.4 3.5 9.2 17.2 17.6 17.7 15.7 0.3 8.4	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 418.3 418.3 249.0 439.3 249.0 439.3 285.1 93.6 298.8 369.2 333.9 446.4 419.8 456.3 202.7	F21	F3 2.6 0.3 4.2 4.6 2.1 2.3 3.6 0.4 3.4 6.0 10.7 12.6 9.4 5.1 9.7	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 4.6 4.6 4.6 4.6 4.6 4.6 5.2 5.4 18.3 20.5 5.6 12.9 6.4 9.8	24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 25.7 30 25.7 31 26.7 342.7 342.7 786.0 350.7 442.7 440.7	7.9	7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[ajanthracene Chrysene Benzo[hluoranthene Benzo[hluoranthene Benzo[byrene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[ajanthracene Benzo[ajanthracene Benzo[ajanthracene Benzo[ajanthracene Benzo[b] Phenanthene Benzo[b] Pyrene Benzo[b] Benzo[b] Benzo[b] Phenanthene Benzo[b]	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6 8.2 3.4 3.4 3.1	F3 F 7.3 7.3 7.3 7.3 7.3 0.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	10 F 19.7 F 2.0 2.0 32.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 22.0 28.7 14.4 23.3 25.4 12.2 21.7 15.5 12.7 15.7 15.7 15.7 15.7 15.7 15.7 15.7 15	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 384.7 22.0 182.0 182.0 182.0 182.9 291.9 292.9 205.3 329.4 402.3	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5 1.7 4.5 4.5 4.5 4.5 4.5	CHML F1 11.1 0.8 5.6 2.3 4.4 0.4 0.5 6.6 2.3 3.6 F1 4.4 0.5 6.6 6.6 0.2 3.1 7.3 7.3 3.6 4.5	0 F 18.7 1.6 18.2 25.2 18.3 26.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4 50.4 50.4 19.2 20.5	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 316.3 359.9 491.8 349.3 3228.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 <u>F21 F3</u> 3.1 <u>F21 F3</u> 3.1 17.3 10.7 16.1 16.3 1.6	F10 90.5 46.4 26.7 31.1 5.4 6.4 10.9 7.4 7.4 5.4 4.9 5.4 9.2 7.4 10.9 7.4 5.2 17.6 12.5 22.6 22.2 17.6 10.3 8.4 5.5 5.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 418.3 418.3 418.3 418.3 418.3 418.4 298.8 300 298.8 30 30 30 30 30 30 32.8 369.2 333.9 446.4 449.8 456.3 33.9 446.4 445.3 202.7 7 457.7 312.5	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 9.4 5.6 12.2 5.1 9.0 9.1	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 4.0 5.2 4.6 4.6 4.6 4.6 4.6 4.6 5.2 5.4 18.3 20.5 5.6 12.9 6.4 9.8	24.9 24.9 24.9 24.9 2.4 27.0 32.5 47.3 F 36.5 67.4 61.5 72.2 217.3 178.3 241.8 18.0 223.0	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 25.7 30 25.7 33 426.3 461.7 786.0 350.7 442.7 442.7 442.7 9.38 462.3		7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]byrene Benzo[a]byrene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[b],k[fluoranthene Thrsene Triphenylene 'Thrysene Triphenylene 'Thrysene Triphenylene 'Thrysene Triphenylene 'Thrysene Benzo[a]hjanthracene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]byrene Benzo[a]byrene Benzo[a]byrene	6.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3 6.6 6.3 5.6 6.2 2.6 8.2 3.4 3.1 0.5	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 33.4 31.3 4.8 4.8 4.5	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 10 F 16.8 1.4 23.3 25.4 12.2 21.7 12.7 12.7 15.5 2.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22.0 182.0 182.0 182.0 182.0 182.0 182.0 30.7 282.0 329.4 402.3 329.4 402.3	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5 1.7 1.5 2.9 4.5 2.9 2.9 2.6	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC 6.6 2.3 1.7 3.6 1.6 2.4 0.4 3.7 3.6 2.4 0.4 3.7 3.6 1.6 2.2 3.6 1.6 2.2 3.1 7.3 3.6 4.5 2.2	0 F 18.7 18.6 18.7 18.7 18.7 18.2 25.2 18.3 26.2 11.2 14.2 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 30 30 30 30 491.8 349.3 228.9 52.5	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 7.3 10.7 16.1 1.6 1.6	F10 90.5 46.4 26.7 31.1 5.4 6.4 10.9 7.4 7.4 5.4 4.9 5.4 9.2 7.2 5.4 5.5 12.5 22.6 22.2 17.6 15.7 0.3 8.4 5.5 10.4 5.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 392.8 3418.3 418.3 30.7 249.0 439.3 285.1 93.6 298.8 30 32.9 339.2 35.2 35.2 35.2 35.2 35.2 35.2 35.2 35	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 F3 10.7 F3 10.7 F3 10.7 5.6 12.2 5.1 9.0 9.7 8.1	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 9.8 4.6	24.9 24.9 24.9 24.9 24.9 26.7 26.7 26.7 26.7 26.7 39.5 26.7 26.7 39.5 26.7 27.0 32.5 67.4 47.3 461.5 72.2 217.3 468.4 217.3 468.4 217.3 217.3 468.3 217.5 217.5 21	30 91.4 21.1 327.0 315.9 353.7 30 267.2 33.4 1854.0 257.7 30 155.7 30 155.7 33 426.3 34 263.7 35 30 257.7 35 30 255.7 7 86.0 35 30 255.7 7 86.0 35 30 25.7 7 86.0 35 30 25.7 7 86.0 35 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 35.7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[a,h]anthracene REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]fluoranthene Benzo[b]	5.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3 0.3 5.6 5.2 2.6 8.2 3.4 3.4 3.1	F3 F 7.3 7.3 7.3 7.3 7.3 0.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	10 F 19.7 F 2.0 2.0 32.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 12.0 22.0 28.7 14.4 23.3 25.4 12.2 21.7 15.5 12.7 12.7 15.5 12.7 15.5 12.7 12.7 15.5 12.7 15.5 12.7 12.7 15.5 12.7 12.7 15.5 12.7 12.7 15.5 12.7 15.7 15.5 12.7 15.7 15.7 15.7 15.7 15.7 15.7 15.7 15	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 384.7 22.0 182.0 182.0 182.0 182.9 291.9 292.9 205.3 329.4 402.3	F21 F3 9.7 0.4 3.7 3.0 3.5 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5 1.7 4.5 4.5 4.5 4.5 4.5	CHML F1 11.1 0.8 5.6 2.3 4.4 0.4 0.5 6.6 2.3 3.6 F1 4.4 0.5 6.6 6.6 0.2 3.1 7.3 7.3 3.6 4.5	0 F 18.7 1.6 18.2 25.2 18.3 26.2 18.3 26.2 11.2 14.2 2.1 20.4 35.2 0 F 13.8 2.3 28.9 37.2 23.4 50.4 50.4 19.2 20.5	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 103.3 12.6 303.4 316.3 359.9 491.8 349.3 3228.9	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 <u>F21 F3</u> 3.1 <u>F21 F3</u> 3.1 17.3 10.7 16.1 16.3 1.6	F10 90.5 46.4 26.7 31.1 5.4 6.4 10.9 7.4 7.4 5.4 4.9 5.4 9.2 7.4 10.9 7.4 5.2 17.6 12.5 22.6 22.2 17.6 10.3 8.4 5.5 5.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 418.3 418.3 418.3 418.3 418.3 418.3 418.4 298.8 300 298.8 30 30 30 30 30 30 32.8 369.2 333.9 446.4 449.8 456.3 33.9 446.4 445.3 202.7 7 457.7 312.5	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 12.6 9.4 9.4 5.6 12.2 5.1 9.0 9.1	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 9.8 4.6	24.9 24.9 24.9 24.9 2.4 27.0 32.5 47.3 F 36.5 67.4 61.5 72.2 217.3 178.3 241.8 18.0 223.0	30 91.4 21.1 327.0 315.9 353.7 302.5 267.2 33.4 185.4 382.8 523.7 30 25.7 30 25.7 33 426.3 461.7 786.0 350.7 442.7 442.7 442.7 9.38 462.3		7	7.5	62.4	774.0
REPORTED RESULT ng Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]byrene Benzo[a]byrene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[a]hjanthracene Benzo[b],k[fluoranthene Thrsene Triphenylene 'Thrysene Triphenylene 'Thrysene Triphenylene 'Thrysene Triphenylene 'Thrysene Benzo[a]hjanthracene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]byrene Benzo[a]byrene Benzo[a]byrene	6.0 4.0 6.0 2.0 4.0 5.0 4.7 F21 6.3 6.6 6.3 5.6 6.2 2.6 8.2 3.4 3.1 0.5	F3 F 7.3 7.3 10.0 3.0 2.0 2.0 2.0 2.0 2.0 3.7 3.3 6.7 7.0 7.0 7.0 7.0 33.4 31.3 4.8 4.8 4.5	10 F 19.7 2.0 22.0 33.3 19.7 24.0 23.7 12.0 12.0 22.0 28.7 10 F 16.8 1.4 23.3 25.4 12.2 21.7 12.7 12.7 15.5 2.0	74.3 22.0 266.3 364.0 370.3 304.0 283.3 164.7 384.7 384.7 384.7 309.7 22.0 182.0 182.0 182.0 182.0 182.0 182.0 30.7 282.0 329.4 402.3 329.4 402.3	F21 F3 9.7 0.4 3.7 2.7 3.0 3.5 1.7 1.7 1.9 0.5 2.9 4.6 F21 F3 0.2 3.8 4.5 1.7 1.5 2.9 4.5 2.9 2.9 2.6	CHML F1 11.1 0.8 5.4 5.6 2.3 4.4 1.6 2.4 0.4 3.7 3.6 EERC 6.6 2.3 1.7 3.6 1.6 2.4 0.4 3.7 3.6 2.4 0.4 3.7 3.6 1.6 2.2 3.6 1.6 2.2 3.1 7.3 3.6 4.5 2.2	0 F 18.7 18.6 18.7 18.7 18.7 18.2 25.2 18.3 26.2 11.2 14.2 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2	30 81.3 12.0 245.7 212.9 268.7 368.9 214.1 213.4 27.9 154.4 392.7 30 30 30 30 30 30 491.8 349.3 228.9 52.5	100.5 62.3 32.3 37.7 8.2 14.6 12.3 10.4 7.4 11.9 8.4 13.1 F21 F3 3.1 7.3 10.7 16.1 1.6 1.6	F10 90.5 46.4 26.7 31.1 5.4 6.4 10.9 7.4 7.4 5.4 4.9 5.4 9.2 7.2 5.4 5.5 12.5 22.6 22.2 17.6 15.7 0.3 8.4 5.5 10.4 5.5	95.7 56.1 44.3 57.9 27.8 46.2 37.9 27.0 20.3 26.2 25.1 12.8 35.9	225.0 116.8 392.8 392.8 3418.3 418.3 30.7 249.0 439.3 285.1 93.6 298.8 30 32.9 339.2 35.2 35.2 35.2 35.2 35.2 35.2 35.2 35	F21	F3 2.6 0.3 4.2 2.1 2.3 3.6 0.4 3.4 2.7 6.0 F3 10.7 F3 10.7 F3 10.7 F3 10.7 5.6 12.2 5.1 9.0 9.7 8.1	FMI F10 5.0 0.7 7.5 11.9 2.8 2.7 3.0 0.2 4.6 15.4 18.3 20.5 5.6 12.9 6.4 9.8 4.6 10.5	24.9 24.9 24.9 24.9 24.9 26.7 26.7 26.7 26.7 26.7 39.5 26.7 26.7 39.5 26.7 27.0 32.5 67.4 47.3 461.5 72.2 217.3 468.4 217.3 468.4 217.3 217.3 468.3 217.5 217.5 21	30 91.4 21.1 327.0 315.9 353.7 30 267.2 33.4 1854.0 257.7 30 155.7 30 155.7 33 426.3 34 263.7 35 30 257.7 35 30 255.7 7 86.0 35 30 255.7 7 86.0 35 30 25.7 7 86.0 35 30 25.7 7 86.0 35 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 30 25.7 7 35.7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		7	7.5	62.4	774.0

Table 8.– Results of the concentrations analysed by each laboratory

			IVL			1		LANUV				NERI				ABUM				ERLAF	>	1
	F21	F3	F10		30	F21	F3	F10	F3	0	F21 F3	F10	F30		F21 F3	F10	0 F	30	F21 F3	F1	0 F	30
Phenanthrene		30.0	30.0	30.0	30.0										60.9	24.9	10.8	3.5	32.9	27.1	5.7	9.9
Anthracene Fluoranthene		30.0 30.0	30.0 30.0	30.0 30.0	30.0 30.0										61.0 5.1	9.8 4.8	9.9 1.5	3.8	36.9 12.5	27.9 40.4	22.1 11.8	12.9 11.4
Pyrene		30.0	30.0	30.0	30.0										8.3	7.7	2.4	5.1	11.6	27.2	12.7	6.7
Benzo[a]anthracene				30.0	0.0	24.	3	24.3	24.3	24.3					9.6	9.0	4.3	7.2	10.2	11.8	13.1	8.3
Chrysene		30.0	30.0	30.0	30.0		-								10.0	7.2	2.8	4.1				
Benzo[b]fluoranthene Benzo[j]fluoranthene		30.0	30.0	30.0	30.0	14.	в	14.8	14.8 13.2	14.8 13.2									8.0 6.3	8.7 12.7	12.2 13.1	7.9 8.1
Benzo[k]fluoranthene		30.0	30.0	30.0	30.0	10.	5	10.5	10.5	10.5					12.2	24.2	15.0	20.7	10.5	15.5	13.8	9.0
Benzo[e]pyrene															18.7	23.1	8.0	6.3	21.0	29.8	15.2	10.7
Benzo[a]pyrene		30.0	30.0	30.0	30.0	14.	5	14.5	14.5	14.5					12.4	30.6	16.1	5.7	13.5	15.1	14.9	7.8
Perylene Indeno[1,2,3,-c,d]pyrene		30.0	30.0	30.0	30.0	9.		9.8	9.8	9.8					56.1 42.6	82.0 44.5	24.4 15.8	4.1 7.3	9.0 9.5	23.2 11.5	10.9 15.3	10.3 8.4
Dibenzo[a,h]anthracene		30.0	30.0	30.0	30.0	21.		21.7	21.7	21.7					53.7	44.5	15.8	11.0	14.0	42.4	27.7	15.9
Benzo[g,h,i]perylene		30.0	30.0	30.0	30.0		-								7.7	4.5	2.4	3.3	13.3	9.4	15.2	10.0
*Chrysene+Triphenylene							_								4.7	5.6	3.3	4.1	11.0	17.8	20.1	11.5
*Benzo[b.j,k]fluoranthene			EPA-LT			13.	7	13.7 AWEL	13.4	11.6		EEA			34.2	62.2 KAL	4.6	5.3	4.7	6.7 ERLAP#	7.7	5.0
EXPANDED UNCERTAINTY	F21	F3	F10	F	30	F21	F3	F10	F3	0	F21 F3		F30		F21 F3	F1	0 F	30	F21 F3	F1		30
Phenanthrene						. = .				-	17.2	17.2	17.2	17.2					10.4	8.3	6.0	7.3
Anthracene		25.8	25.8	25.8	25.8						21.5	21.5	21.5	21.5					20.0	36.8	7.3	16.3
Fluoranthene						20.	D	20.0	20.0	20.0	6.9	6.9	6.9	6.9					6.2	6.9	5.8	5.4
Pyrene Benzo[a]anthracene		22.0	22.0	22.0	22.0	20.	U	20.0	20.0 20.0	20.0 20.0	17.0 12.0	17.0 12.0	17.0 12.0	17.0 12.0			18.8	18.9	6.2	12.8 5.4	5.6 6.8	5.5 5.5
Chrysene		22.0	22.0	22.0	22.0				20.0	20.0	30.2	30.2	30.2	30.2			10.0	10.9	6.5	5.4	0.0	5.5
Benzo[b]fluoranthene		19.3	19.3	19.3	19.3				20.1	20.1	27.6	27.6	27.6	27.6					5.5	5.2	5.8	5.4
Benzo[j]fluoranthene																			5.6	5.5	6.8	5.3
Benzo[k]fluoranthene		25.9	25.9	25.9	25.9				20.0	20.0	33.5	33.5	33.5	33.5					5.9 13.2	6.4 14.9	6.0 11.0	5.4 9.7
Benzo[e]pyrene Benzo[a]pyrene		26.1	26.1	26.1	26.1				20.0	20.0	28.2	28.2	28.2	28.2			22.9	22.9	7.5	7.3	11.0	9.7
Perviene		20.1	20.1	20.1	20.1				20.0	20.0	20.2	20.2	20.2	20.2			22.0	22.0	7.4	6.7	10.4	8.7
Indeno[1,2,3,-c,d]pyrene		22.3	22.3	22.3	22.3				20.0	20.0							34.2	34.0	5.6	7.7	6.9	5.5
Dibenzo[a,h]anthracene		21.2	21.2	21.2	21.2					20.0							38.0	38.0	6.7	8.4	11.0	5.8
Benzo[g,h,i]perylene *Chrysene+Triphenylene		17.3	17.3	17.3	17.3				20.0	20.0	29.0	29.0	29.0	29.0					5.4 6.5	7.1 9.1	7.8 5.9	6.1 5.4 3.3
*Benzo[b.j,k]fluoranthene																					3.7	5.4
						20.	D		19.9	2.0					32.8	32.7	33.0	33.0	4.0	3.4	3.7	3.3
			APA-LRA					СНМИ				ISSeP				FMI			4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY	F21	F3	APA-LRA F10	F	30	F21	F3	F10	F3	0	F21 F3	F10			F21 F3	FMI F1	0 F	30	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene	F21	F3		F	30	F21 37.	F3 3	F10 37.3	F3 37.3	0 37.3	23.3	F10 23.3	23.3	23.3	F21 F3 85.0	FMI F1 85.0	0 F 85.0	30 25.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY	F21	F3		F	30	F21	F3 3 7	F10	F3	0		F10			F21 F3	FMI F1	0 F	30	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene	F21	F3		F	30	F21 37. 7. 32. 14.	F3 3 7 8 7	F10 37.3 7.7 32.8 14.7	F3 37.3 7.7 32.8 14.7	0 37.3 7.7 32.8 14.7	23.3 28.9 19.1 21.4	F10 23.3 28.9 19.1 21.4	23.3 28.9 19.1 21.4	23.3 28.9 19.1 21.4	F21 F3 85.0 54.0 35.0 73.0	FMI 85.0 54.0 35.0 73.0	0 F 85.0 54.0 35.0 73.0	30 25.0 47.0 16.0 19.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene	F21	F3		F	30	F21 37. 7. 32. 14. 23.	F3 3 7 8 7 9	F10 37.3 7.7 32.8 14.7 23.9	F3 37.3 7.7 32.8 14.7 23.9	0 37.3 7.7 32.8 14.7 23.9	23.3 28.9 19.1 21.4 28.1	F10 23.3 28.9 19.1 21.4 28.0	23.3 28.9 19.1 21.4 28.1	23.3 28.9 19.1 21.4 28.1	F21 F3 85.0 54.0 35.0	FMI F10 85.0 54.0 35.0	0 F 85.0 54.0 35.0	30 25.0 47.0 16.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene	F21	F3		F	30	F21 37. 7. 32. 14.	F3 3 7 8 7 9	F10 37.3 7.7 32.8 14.7	F3 37.3 7.7 32.8 14.7	0 37.3 7.7 32.8 14.7	23.3 28.9 19.1 21.4 28.1 24.0	F10 23.3 28.9 19.1 21.4 28.0 23.9	23.3 28.9 19.1 21.4 28.1 23.9	23.3 28.9 19.1 21.4 28.1 23.9	F21 F3 85.0 54.0 35.0 73.0	FMI 85.0 54.0 35.0 73.0	0 F 85.0 54.0 35.0 73.0	30 25.0 47.0 16.0 19.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	F21	F3		F	30	F21 37. 7. 32. 14. 23.	F3 3 7 8 7 9	F10 37.3 7.7 32.8 14.7 23.9	F3 37.3 7.7 32.8 14.7 23.9	0 37.3 7.7 32.8 14.7 23.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7	23.3 28.9 19.1 21.4 28.1 23.9 25.6	23.3 28.9 19.1 21.4 28.1 23.9 25.6	F21 F3 85.0 54.0 35.0 73.0	FMI 85.0 54.0 35.0 73.0	0 F 85.0 54.0 35.0 73.0	30 25.0 47.0 16.0 19.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene	F21	F3		F	30	F21 37. 7. 32. 14. 23.	F3 3 7 8 7 9	F10 37.3 7.7 32.8 14.7 23.9	F3 37.3 7.7 32.8 14.7 23.9	0 37.3 7.7 32.8 14.7 23.9	23.3 28.9 19.1 21.4 28.1 24.0	F10 23.3 28.9 19.1 21.4 28.0 23.9	23.3 28.9 19.1 21.4 28.1 23.9	23.3 28.9 19.1 21.4 28.1 23.9	F21 F3 85.0 54.0 35.0 73.0	FMI 85.0 54.0 35.0 73.0	0 F 85.0 54.0 35.0 73.0	30 25.0 47.0 16.0 19.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]givarenthene Benzo[k]givaren	F21	F3		F	30	F21 37. 7. 32. 14. 23. 14.	F3 3 7 8 7 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9	F3 37.3 7.7 32.8 14.7 23.9 14.9	0 37.3 7.7 32.8 14.7 23.9 14.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7	F21 F3 85.0 54.0 35.0 73.0 40.0	FMI 85.0 54.0 35.0 73.0 40.0	0 F 85.0 54.0 35.0 73.0 40.0	30 25.0 47.0 16.0 19.0 28.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[e]pyrene Benzo[e]pyrene	F21	F3		F	30	F21 37. 7. 32. 14. 23.	F3 3 7 8 7 9 9	F10 37.3 7.7 32.8 14.7 23.9	F3 37.3 7.7 32.8 14.7 23.9	0 37.3 7.7 32.8 14.7 23.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1	F21 F3 85.0 54.0 35.0 73.0	FMI 85.0 54.0 35.0 73.0	0 F 85.0 54.0 35.0 73.0	30 25.0 47.0 16.0 19.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene	F21	F3		F	30	F21 37. 7. 32. 14. 23. 14. 20.	F3 3 7 8 7 9 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3	F3 37.3 7.7 32.8 14.7 23.9 14.9	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3	23.3 28.9 19.1 21.4 28.1 25.6 18.8 26.7 27.4	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4	F21 F3 85.0 54.0 35.0 73.0 40.0 25.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0	0 F 85.0 54.0 35.0 73.0 40.0 25.0	30 25.0 47.0 16.0 19.0 28.0 11.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[e]pyrene Benzo[e]pyrene	F21	F3		F	30	F21 37. 32. 14. 23. 14. 20. 19. 9.	F3 3 7 8 7 9 9 9 9 3 8 7	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7	0 37.3 7.7 32.8 14.7 23.9 14.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2	F21 F3 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0	30 47.0 16.0 19.0 28.0 11.0 48.0 26.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Dibenzo[a,h]anthracene Benzo[b],h]pertylene	F21	F3		F	30	F21 37. 32. 14. 23. 14. 20.	F3 3 7 8 7 9 9 9 9 3 8 7	F10 37.3 32.8 14.7 23.9 14.9 20.3	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1	F21 F3 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0	FMI F11 85.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 47.0	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0	30 47.0 16.0 19.0 28.0 11.0 48.0 26.0 48.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Bibenzo[a,h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene Benzo[g],h]apthracene Benzo[F21	F3		F	30	F21 37. 32. 14. 23. 14. 20. 19. 9.	F3 3 7 8 7 9 9 9 3 8 7 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9	F3 37.3 7.7 32.8 14.7 23.9 14.9 14.9 20.3 19.8 9.7 19.9	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2	F21 F3 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 30.0	FMI F11 85.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0 30.0	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0 30.0	30 25.0 47.0 16.0 28.0 28.0 11.0 48.0 26.0 48.0 14.0	4.0	3.4	3.1	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Dibenzo[a,h]anthracene Benzo[b],h]pertylene	F21	F3		F	30	F21 37. 32. 14. 23. 14. 20. 19. 9.	F3 3 7 8 7 9 9 9 3 8 7 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2	F21 F3 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0	FMI F11 85.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 47.0	0 F 85.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0 30.0 21.0	30 47.0 16.0 19.0 28.0 11.0 48.0 26.0 48.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]ryerene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]ryerene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b,j,k]fluoranthene "Benzo[b,j,k]fluoranthene EXPANDED UNCERTAINTY	F21	F3	F10 VMM F10	F	30	F21 37. 7. 32. 14. 20. 19. 9. 19. 9. 19. 23. F21	F3 37 88 77 99 99 33 88 77 99 4	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3	0 37.3 7.7 32.8 14.7 23.9 14.9 14.9 20.3 19.8 9.7 19.9 23.4	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 26.3	23.3 28.9 19.1 21.4 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 54.0 55.0 73.0 40.0 25.0 53.0 40.0 47.0 30.0 21.0 F21 F3	FMI F1/ 85.0 54.0 35.0 73.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 4	0 F 85.0 54.0 35.0 40.0 25.0 53.0 40.0 47.0 30.0 21.0 G 0 F	30 25.0 47.0 19.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 30	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]grvene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[g,h,i]perylene "Chrysene+Triphenylene "Benzo[g,h,i]harthracene Benzo[g,h,i]perylene "Chrysene+Triphenylene "Benzo[b,j,k]fluoranthene EXPANDED UNCERTAINTY		F3 14.0	F10 F10 14.0	F 14.0	30 14.0	F21 37. 7. 32. 14. 23. 14. 20. 19. 9. 19. 23. F21 12.	F3 F3 F3 F7 F3 F3 F3	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0	F3 37.3 7.7 32.8 14.7 23.9 14.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 12.3	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 55.0 54.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 47.0 30.0 21.0 21.0	FMI 85.0 54.0 36.0 73.0 40.0 53.0 53.0 40.0 40.0 47.0 30.0 21.0 AEA/ES	0 F 85.0 54.0 35.0 73.0 40.0 53.0 40.0 53.0 40.0 47.0 30.0 21.0 G	30 25.0 47.0 19.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 30 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]ryerene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene Benzo[b],k]fluoranthene "Chrysene+Triphenylene "Shorzenb_i,k]fluoranthene EXPANDED UNCERTAINTY Phenanthrene Anthracene		F3 14.0 21.0	F10 VMM F10 14.0 21.0	F 14.0 21.0	30 14.0 21.0	F21 37. 7. 32. 14. 23. 14. 20. 19. 9. 9. 19. 23. 72. 72. 103.	F3 7 8 9 9 3 8 7 9 9 4 4 F3 0 0 1	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0 02.6	F3 37.3 7.7 32.8 14.7 23.9 14.9 19.8 9.7 19.9 23.4 F3 102.7	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 F3 20.0 F31	FMI 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 21.0 S3.0 40.0 53.0 53.0 40.0 53.0 53.0 53.0 53.0 54.0 54.0 54.0 54.0 54.0 55.0 54.0 54.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 55.0 54.0 55.0 55.0 54.0 55.0 5	0 F 85.0 54.0 36.0 73.0 40.0 25.0 53.0 40.0 47.0 21.0 G 0 F 20.0	30 25.0 47.0 19.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 30 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]gyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b,k]fluoranthene "benzo[b,k]fluoranthene EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene		F3 14.0 21.0 14.7	VMM F10 14.0 21.0 14.7	F 14.0 21.0 14.7	30 14.0 21.0 14.7	F21 37. 7. 32. 14. 23. 14. 20. 19. 9. 9. 19. 20. 19. 9. 19. 23. F21 12. 103. 5.	F3 7 8 9 9 9 9 3 8 7 7 9 9 4 4 5 7 9 9 1 0 0 1 0 0	F10 37.3 7.7 32.8 14.7 23.9 14.9 14.9 20.3 19.8 9.7 19.9 9.7 19.9 23.4 EERC F10 12.0 12.0 5.0	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 55.0 54.0 55.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 51.0 52.0 52.0 53.0 40.0 47.0 30.0 21.0 52.0	FMI F11 85.0 54.0 35.0 73.0 40.0 40.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 AEA/ES F11 20.0 20.0	0 F 85.0 54.0 36.0 73.0 40.0 25.0 53.0 40.0 53.0 40.0 53.0 40.0 21.0 G 0 F 20.0 20.0	30 25.0 47.0 16.0 28.0 11.0 48.0 28.0 14.0 19.0 30 20.0 20.0 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],a]anthracene Benzo[b],A]anthracene Dibenzo[a,h]anthracene Dibenzo[a,h]anthracene Benzo[b],A]fluoranthene ExpANDED UNCERTAINTY Phenanthrene		F3 14.0 21.0	F10 VMM F10 14.0 21.0	F 14.0 21.0	30 14.0 21.0	F21 37. 7. 32. 14. 23. 14. 20. 19. 9. 9. 19. 23. 72. 72. 103.	F3 F3 F3 F3 F3 F3 0 1 0 1 0 5 F3 0 1 0 5 5 5 5 5 5 5 5 5 5 5 5 5	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0 02.6	F3 37.3 7.7 32.8 14.7 23.9 14.9 19.8 9.7 19.9 23.4 F3 102.7	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 F3 20.0 F31	FMI 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 21.0 S3.0 40.0 53.0 53.0 40.0 53.0 53.0 53.0 53.0 54.0 54.0 54.0 54.0 54.0 55.0 54.0 54.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 54.0 55.0 55.0 54.0 55.0 55.0 54.0 55.0 5	0 F 85.0 54.0 36.0 73.0 40.0 25.0 53.0 40.0 47.0 21.0 G 0 F 20.0	30 25.0 47.0 19.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 30 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzojajanthracene Chrysene Benzojkjfluoranthene Benzojkjfluoranthene Benzojkjfluoranthene Benzojajpyrene Benzojajpyrene Benzojajayrene Indenoj, 2,3,3,c,djpyrene Indenoj, 2,3,5,djpyrene Benzoja, hjanthracene "Chrysene+Triphenylene "ExPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzojajanthracene Chrysene		F3 14.0 21.0 14.7 15.8	VMM F10 14.0 21.0 14.7 15.8	F 14.0 21.0 14.7 15.8	30 14.0 21.0 14.7 15.8	F21 7. 7. 32. 14. 23. 14. 23. 19. 9. 19. 9. 19. 23. F21 F21 103. 5. 8.	F3 F3 7 9 9 3 8 7 9 4 F3 0 1 0 9 9 4	F10 37.3 7.7 32.8 14.7 23.9 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8 8.1	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 9,7	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 35.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 F21 F3 20.0 20.0 20.0 20.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 25.0 53.0 40.0 40.0 21.0 AEA/ES F11 20.0 20.0	0 F 85.0 54.0 35.0 73.0 40.0 53.0 40.0 40.0 47.0 30.0 21.0 F 20.0 20.0 20.0	30 25.0 47.0 19.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 30 20.0 20.0 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b],k]fluoranthene Benzo[b],k]fluoranthene EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Benzo[a]anthracene Benzo[b]fluoranthene		F3 14.0 21.0 14.7 15.8 16.4	F10 F10 F10 14.0 21.0 14.7 15.8 16.4	F 14.0 21.0 14.7 15.8 16.4	30 14.0 21.0 14.7 15.8 16.4	F21 77 72 14 23 24 24 20 20 19 9 9 19 23 F21 F21 12 103 8 11.	F3 F3 7 9 9 3 8 7 9 4 F3 0 1 0 9 9 4	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0 11.9	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8 8.1 11.9	0 37.3 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 55.0 54.0 55.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 47.0 30.0 21.0 21.0 52.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 20.0 20.0 20.1	0 F 85.0 54.0 36.0 73.0 40.0 25.0 53.0 40.0 53.0 40.0 53.0 40.0 53.0 40.0 53.0 40.0 53.0 40.0 53.0 40.0 53.0 40.0 54.0 50.0 5	30 25.0 47.0 16.0 28.0 28.0 11.0 48.0 28.0 48.0 14.0 19.0 30 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzojajanthracene Chrysene Benzojbjfluoranthene Benzojkjfluoranthene Benzojkjfluoranthene Benzojajpyrene Parylene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzojk,hjanthracene Tenzojb,ikjfluoranthene EXPANDED UNCERTAINTY Phenanthrene Fluoranthene Pyrene Benzojajanthracene Chrysene Benzojbjfluoranthene Benzojbjfluoranthene		F3 14.0 21.0 14.7 15.8 16.4	F10 F10 F10 14.0 21.0 14.7 15.8 16.4	F 14.0 21.0 14.7 15.8 16.4	30 14.0 21.0 14.7 15.8 16.4	F21 77 72 14 23 24 24 20 20 19 9 9 19 23 F21 F21 12 103 8 11.	F3 F3 7 9 9 3 8 7 9 4 F3 0 1 0 9 9 4	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0 11.9	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8 8.1 11.9	0 37.3 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 54.0 35.0 35.0 73.0 40.0 40.0 25.0 53.0 40.0 40.0 52.0 21.0 F21 F3 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 20.0 20.0 20.1	0 F 84.0 54.0 73.0 40.0 40.0 53.0 40.0 53.0 40.0 25.0 53.0 47.0 30.0 21.0 20.0 20.0 20.0 19.9 20.0	30 25.0 47.0 16.0 28.0 28.0 48.0 14.0 19.0 26.0 48.0 14.0 19.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]gyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a,h]anthracene Benzo[b],k]fluoranthene Benzo[b],k]fluoranthene EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene		F3 14.0 21.0 14.7 15.8 16.4	F10 F10 F10 14.0 21.0 14.7 15.8 16.4	F 14.0 21.0 14.7 15.8 16.4	30 14.0 21.0 14.7 15.8 16.4	F21 77 72 14 23 24 24 20 20 19 9 9 19 23 F21 F21 12 103 8 11.	F3 F3 7 9 9 3 8 7 9 4 F3 0 1 0 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0 11.9	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8 8.1 11.9	0 37.3 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 55.0 54.0 55.0 73.0 40.0 40.0 25.0 53.0 40.0 40.0 40.0 40.0 47.0 30.0 21.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 21.0 AEA/ES F11 20.0 20.0 20.0 20.0 20.0	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 47.0 30.0 21.0 20.0 20.0 20.0 20.0 20.0 20.0 2	30 25.0 47.0 16.0 19.0 28.0 28.0 11.0 48.0 26.0 48.0 14.0 19.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzojajanthracene Chrysene Benzojbjfluoranthene Benzojkjfluoranthene Benzojkjfluoranthene Benzojajpyrene Parylene Indeno[1,2,3,-c,d]pyrene Dibenzoja,hjanthracene Benzojbjkfluoranthene EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzojajanthracene Chrysene Benzojbjfluoranthene Benzojbjfluoranthene		F3 14.0 21.0 14.7 15.8 16.4	F10 F10 F10 14.0 21.0 14.7 15.8 16.4	F 14.0 21.0 14.7 15.8 16.4	30 14.0 21.0 14.7 15.8 16.4	F21 77 732 144 233 14. 20. 19. 9. 9. 19. 19. 19. 23. F21 F21 12. 103. 8. 8. 11.	F3 7 8 7 9 9 3 8 8 7 9 9 4 4 F3 0 0 1 0 0 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0 11.9	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 F3 102.7 4.8 8.1 11.9	0 37.3 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 35.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 47.0 30.0 21.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 25.0 53.0 40.0 20.0 20.0 20.1	0 F 85.0 54.0 73.0 40.0 25.0 53.0 40.0 53.0 40.0 53.0 40.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	30 47.00 47.00 16.0 18.00 28.0 28.0 48.0 14.0 19.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 2	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]grvene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b],A[anthracene Benzo[b],A[anthracene Benzo[b],A[anthracene Benzo[b],A[anthracene Benzo[b],A[anthracene EXPANDED UNCERTAINTY Phenanthrene Anthracene Benzo[b]fluoranthene Benzo[b]f		F3 14,0 21,0 15,8 16,4 16,8 18,4	F10 F10 F10 14.0 21.0 14.7 15.8 16.4 16.8 18.4	F 14.0 21.0 14.7 15.8 16.4 16.8 18.4	30 14.0 21.0 14.7 15.8 16.4 16.8 18.4	F21 7. 7. 32. 14. 23. 14. 20. 19. 9. 9. 19. 19. 19. 19. 19.	F3 7 7 7 7 9 9 3 8 8 7 9 9 4 F3 0 1 0 9 9 9 2	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0 02.6 5.0 8.0 11.9 13.7 47.1	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 23.4 F3 102.7 4.8 8 8.1 11.9 14.1 46.8	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9 14.9 46.9	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 54.0 54.0 35.0 73.0 40.0 73.0 25.0 73.0 53.0 40.0 40.0 21.0 71.0 71.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 4	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 53.0 40.0 21.0 20.0 2	30 25.0 47.0 16.0 19.0 28.0 11.0 48.0 48.0 48.0 48.0 19.0 20	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]rene Benzo[b]rene Benzo[b]rene Perylene Indeno[1,2,3,-c.d]pyrene Dibenzo[a,h]anthracene Benzo[b],k]fluoranthene ExpANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[b]luoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene		F3 14.0 21.0 14.7 15.8 16.4 16.8 18.4 18.4	F10 VMM 14.0 21.0 16.8 16.8 16.8 18.4 18.4 14.9	F 14.0 21.0 14.7 15.8 16.4 16.8 18.4 14.9	30 14.0 14.7 14.7 16.8 16.4 16.8 18.4 14.9	F21 7.7 32. 14. 23. 14. 20. 20. 19. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9	F3 F3 7 8 7 7 9 9 9 9 9 4 4 F3 0 0 1 0 0 1 0 0 1 2 0 2 0	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC 500 11.9 12.0 47.1 21.0	F3 37.3 7.7 32.8 14.7 23.9 14.7 23.9 14.7 9.7 19.9 23.4 23.4 F3 102.7 4.8 8.1 102.7 4.8 8.1 11.9 14.1 14.1	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9 14.0 46.9 21.8	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 86.0 54.0 35.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 47.0 30.0 21.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 73.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 25.0 53.0 40.0 40.0 20.0 20.0 20.0 20.0 20.0 20	0 F 85.0 54.0 73.0 40.0 25.0 53.0 40.0 53.0 40.0 53.0 40.0 25.0 53.0 40.0 2	30 47.00 47.00 16.0 18.00 28.0 28.0 48.0 14.00 19.0 20.00 20	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]grvene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[b],k[Iluoranthene Benzo[b],k[Iluoranthene Benzo[b],k[Iluoranthene Benzo[b],luoranthene Benzo[b]fluoran		F3 14,0 21,0 16,8 16,4 16,8 18,4 18,4 14,9 16,7	F10 F10 F10 14.0 21.0 14.7 15.8 16.4 16.8 18.4 18.4 14.9 16.7	F 14.0 21.0 14.7 15.8 16.4 16.8 18.4 14.9 16.7	30 14.0 21.0 14.7 15.8 16.4 16.8 18.4 14.9 16.7	F21 7. 7. 32. 14. 23. 14. 20. 19. 9. 9. 19. 19. 19. 19. 19.	F3 F3 3 7 5 7 7 9 3 8 7 9 9 9 3 8 7 9 9 9 3 8 7 9 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC F10 12.0 002.6 5.0 8.0 11.9 13.7 47.1 21.0 005.8	F3 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 12.3 102.7 4.8 4.8 11.9 14.1 11.9 14.1 46.8 20.5 209.2	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.9 23.4 0 11.6 103.4 4.9 7.9 11.0 10.0 46.9 21.8 207.5	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 55.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 25.0 25.0 53.0 40.0 40.0 21.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 4	0 F 85.0 54.0 35.0 73.0 40.0 25.0 53.0 40.0 40.0 25.0 20.0 2	30 47.0 47.0 19.0 28.0 11.0 48.0 28.0 114.0 48.0 28.0 144.0 20.0	4.0	3.4	3.7	3.3
EXPANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]rene Benzo[b]rene Benzo[b]rene Perylene Indeno[1,2,3,-c.d]pyrene Dibenzo[a,h]anthracene Benzo[b],k]fluoranthene ExpANDED UNCERTAINTY Phenanthrene Anthracene Fluoranthene Pyrene Benzo[b]luoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene		F3 14.0 21.0 14.7 15.8 16.4 16.8 18.4 18.4	F10 VMM 14.0 21.0 16.8 16.8 16.8 18.4 18.4 14.9	F 14.0 21.0 14.7 15.8 16.4 16.8 18.4 14.9	30 14.0 14.7 14.7 16.8 16.4 16.8 18.4 14.9	F21 7.7 32. 14. 23. 14. 20. 20. 19. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9. 9	F3 F3 3 7 5 7 7 9 3 8 7 9 9 9 3 8 7 9 9 9 3 8 7 9 9 9	F10 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 EERC 500 11.9 12.0 47.1 21.0	F3 37.3 7.7 32.8 14.7 23.9 14.7 23.9 14.7 9.7 19.9 23.4 23.4 F3 102.7 4.8 8.1 102.7 4.8 8.1 11.9 14.1 14.1	0 37.3 7.7 32.8 14.7 23.9 14.9 20.3 19.8 9.7 19.9 23.4 0 11.6 103.4 4.9 7.9 11.9 14.0 46.9 21.8	23.3 28.9 19.1 21.4 28.1 24.0 25.6 18.8 26.7 27.4 25.1 28.2 26.3	F10 23.3 28.9 19.1 21.4 28.0 23.9 25.7 17.1 29.2 27.3 25.1 28.2 26.3 EPA-ie	23.3 28.9 19.1 21.4 28.1 23.9 25.6 16.7 29.9 26.3 25.1 26.0 26.3	23.3 28.9 19.1 21.4 28.1 23.9 25.6 18.1 27.7 27.4 25.1 28.2 26.3	F21 F3 54.0 54.0 35.0 73.0 40.0 73.0 25.0 73.0 53.0 40.0 40.0 21.0 71.0 71.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	FMI F11 85.0 73.0 40.0 25.0 53.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 4	0 F 85.0 54.0 73.0 40.0 25.0 53.0 40.0 53.0 40.0 53.0 40.0 25.0 53.0 40.0 2	30 47.00 47.00 16.0 18.00 28.0 28.0 48.0 14.00 19.0 20.00 20	4.0	3.4	3.7	3.3

Table 9.- Expanded uncertainties reported by each laboratory

Table 10.- bias with respect to the reference value

		IVL				LANUV	<i>,</i>			NER				ABUN	1			ERLA	١P	
bias %	F21 F3		0 F	30	F21 F3			30	F21 F			30	F21 F3	F1		30	F21 F			-30
Phenanthrene	-32.3	-28.8	-25.1	-13.3									-64.3	-37.7	-34.1	-0.1	70.8	32.8	9.9	26.5
Anthracene	-53.8	-27.2	-32.9	-25.0									-64.6	-31.1	-41.7	-8.4	-17.3	-13.2	-9.8	-2.3
Fluoranthene	-5.9	-14.7	-11.0	-13.5									-26.2	-24.1	-21.3	1.3	13.9	3.4	6.9	11.8
Pyrene	-19.2	-12.0	-13.2	-12.1									-30.8	-17.2	-22.9	-3.6	7.1	16.7	3.1	9.8
Benzo[a]anthracene	-38.9		-15.7	-20.4	-34.2	-31.0	-8.3	-0.8	135.0	35.2	89.9	62.0	-24.0	-46.5	-17.8	2.1	-2.1	-21.3	10.9	0.9
Chrysene	-43.7	-53.1	0.1	-7.7									-45.3	-70.0	-11.5	10.9				
Benzo[b]fluoranthene	-6.7	18.4	0.8	-8.7	-11.4	52.9	-4.5	-0.5									9.8	35.4	1.2	16.2
Benzo[j]fluoranthene							11.8	19.2									2.3	2.2	-3.3	-5.4
Benzo[k]fluoranthene	-12.7	-14.4	-8.6	-19.5	-26.9	7.7	-15.1	1.8					-32.2	-27.0	-29.2	-9.0	27.0	40.8	18.5	24.5
Benzo[e]pyrene									82.5	65.6	21.2	49.5	-47.8	-26.1	-34.4	3.0	-32.0	15.1	-7.3	-1.3
Benzo[a]pyrene	-5.3	-24.6	-0.8	-12.1	-11.1	-9.9	-2.1	12.4	394.6	40.2	90.0	81.8	-16.1	-26.8	-22.4	5.1	-2.4	-8.4	20.2	2.1
Perylene									300.1	23.9	25.6	61.5	-34.1	-19.2	-46.6	-5.2	43.2	9.7	-10.4	4.5
Indeno[1,2,3,-c,d]pyrene	5.3	-20.9	8.1	-17.2	-20.1	22.8	9.9	22.2	238.7	34.7	87.8	96.2	-16.7	-8.0	-18.0	-3.0	14.4	3.0	13.1	0.8
Dibenzo[a,h]anthracene	-43.3	-53.7	15.3	39.1	-70.2	-67.2	-35.6	7.8	63.3	-40.1	69.5	93.6	-58.0	-59.0	-17.8	-4.8	-60.5	-78.8	-28.6	11.5
Benzo[g,h,i]perylene	12.2	-5.3	13.0	14.2					128.8	31.0	46.4	58.9	-27.9	-25.4	-18.2	9.7	-9.1	-11.6	-2.3	-6.1
*Chrysene+Triphenylene									106.3	70.9	61.0	48.8	2.5	-9.6	-5.6	10.9	31.5	41.1	11.0	-0.8
*Benzo[b.j,k]fluoranthene					-30.5	-21.5	4.1	19.7	319.9	69.6	132.1	109.9	-19.4	-30.8	-26.8	-9.5	20.9	-0.6	11.6	11.0
		EPA-L	т			AWEL				EEA				KAL				ERLA	P#T	
bias %	F21 F3	3 F1	0 F	30	F21 F3	F10) F:	30	F21 F	3 F	10 F	30	F21 F3	F1	10 F	30	F21 F	-3 F	10 1	-30
Phenanthrene									2524.6	254.5	275.0	100.9	1.9	13.1	-4.6	4.3	12.3	29.6	47.7	2.5
Anthracene	112.9	176.0	41.9	22.8				4.2	3612.6	1418.4	789.3	68.5	439.7		44.1	15.5	45.4	-56.3	81.6	-22.7
Fluoranthene					434.4	171.5	69.3	-1.6	719.0	178.9	158.5	59.4	-2.8	-1.4	-9.2	0.7	9.4	13.4	22.4	9.8
Pyrene					533.9	164.9	75.3	-6.2	544.4	155.4	148.8	56.5	-14.5	-3.2	-13.5	-3.0	10.7	14.1	22.3	9.5
Benzo[a]anthracene	65.4	497.0	81.3	1.6			35.6	3.8	172.4	-21.5	84.6	55.5	-	-	-6.9	-2.4	-19.0	-27.6	23.9	-0.7
Chrysene	-1.3	85.4	15.7	1.9			65.1	21.6	72.9	-38.8	95.0	60.4						2		
Benzo[b]fluoranthene	53.6	500.3	36.2	-1.9	246.3		129.0	84.2	181.9	212.1	202.9	142.5					-2.5	24.5	-2.6	10.5
Benzo[j]fluoranthene	'							=									-2.3	-2.2	-8.6	-13.8
Benzo[k]fluoranthene	57.7	492.8	45.3	-3.0			16.2	9.1	2.6	42.2	76.6	-2.5					-12.9	-7.2	11.1	10.0
Benzo[e]pyrene	-							-				-					-64.5	-54.7	20.6	-1.7
Benzo[a]pyrene	37.6	341.7	56.3	7.7			39.9	5.5	64.5	1.5	36.1	-1.3			-7.7	-9.7	-6.6	-12.8	84.7	6.1
Perylene																	-9.1	-14.4	31.5	0.7
Indeno[1,2,3,-c,d]pyrene	75.8	365.1	25.1	-0.1			29.7	2.4							6.3	8.2	-9.3	-21.4	-0.2	-6.0
Dibenzo[a,h]anthracene	119.1	259.8	53.2	11.2				14.0							52.2	6.4	-69.9	-80.6	-52.6	-13.0
Benzo[g,h,i]perylene	50.3	78.7	-8.7	2.4			28.3	-2.3	-21.6	-39.8	51.1	9.1	1.0	16.9	-2.9	-3.6	-12.2	-8.8	29.9	22.6
*Chrysene+Triphenylene												-	-					1.0		6.3
																	-6.6	1.0		
*Benzolb.i.klfluoranthene					138.5	56.8	52.6	9.3					50.7	52.6	-0.1	-9.1	-6.6 -8.6	-14.9	10.2 6.2	2.4
*Benzo[b.j,k]fluoranthene		APA-LF	RA		138.5	56.8 CHMU	52.6	9.3		ISSel	P		50.7	52.6 FMI	-0.1	-9.1				
*Benzo[b.j,k]fluoranthene bias %	F21 F3			30	138.5 F21 F3			9.3 30	F21 F			30	50.7 F21 F3			-9.1 30				
	F21 F3 29.4			-26.7		CHMU			F21 F 2499.8			122.0		FMI		30 -9.9				
bias %		3 F1	0 F		F21 F3	CHMU F10) F:	30		3 F	10 F		F21 F3	FMI F1	10 F	30				
bias % Phenanthrene		3 F1	0 F 27.3	-26.7	F21 F3 149.8	CHMU F10 82.9	21.1	30 -19.8	2499.8	3 F 1390.5	10 F 519.5	122.0	F21 F3 -33.5	FMI F1 -17.9	10 F	30 -9.9				
bias % Phenanthrene Anthracene	29.4	3 F1 20.8	0 F 27.3 -17.3	-26.7 37.6	F21 F3 149.8 -22.6	CHMU F10 82.9 13.4	21.1 -35.5	30 -19.8 -24.8	2499.8 11113.1	3 F 1390.5 6162.9	10 F 519.5 2219.6	122.0 630.5	F21 F3 -33.5 -46.9	FMI F1 -17.9 -2.8	10 F -12.5 -2.4	30 -9.9 31.9				
bias % Phenanthrene Anthracene Fluoranthene	29.4 -5.3	8 F1 20.8 2.1	0 F 27.3 -17.3 -13.1	-26.7 37.6 -12.6	F21 F3 149.8 -22.6 -12.6	CHMU F10 82.9 13.4 -24.9	21.1 -35.5 -28.2	30 -19.8 -24.8 -19.4	2499.8 11113.1 665.2	3 F 1390.5 6162.9 272.2	10 F 519.5 2219.6 74.8	122.0 630.5 28.9	F21 F3 -33.5 -46.9 0.3	FMI F1 -17.9 -2.8 4.8	10 F -12.5 -2.4 19.4	30 -9.9 31.9 7.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene	29.4 -5.3	3 F1 20.8 2.1 -9.8 -19.9	0 F 27.3 -17.3 -13.1 4.4	-26.7 37.6 -12.6 13.7 10.2	F21 F3 149.8 -22.6 -12.6 -41.8	CHMU F10 82.9 13.4 -24.9 -49.4	21.1 -35.5 -28.2 -21.1	30 -19.8 -24.8 -19.4 -33.5 -20.0	2499.8 11113.1 665.2 728.7	3 F [*] 1390.5 6162.9 272.2 180.7	10 F 519.5 2219.6 74.8 81.3	122.0 630.5 28.9 30.6 24.1	F21 F3 -33.5 -46.9 0.3 1.1	FMI F1 -17.9 -2.8 4.8 7.1	10 F -12.5 -2.4 19.4 23.8	30 -9.9 31.9 7.3 -1.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene	29.4 -5.3 31.8	3 F1 20.8 2.1 -9.8	0 F 27.3 -17.3 -13.1 4.4 -11.5	-26.7 37.6 -12.6 13.7	F21 F3 149.8 -22.6 -12.6 -41.8 34.5	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9	21.1 -35.5 -28.2 -21.1 -17.7	30 -19.8 -24.8 -19.4 -33.5	2499.8 11113.1 665.2 728.7 272.2	3 F ¹ 1390.5 6162.9 272.2 180.7 44.7	10 F 519.5 2219.6 74.8 81.3 25.2	122.0 630.5 28.9 30.6	F21 F3 -33.5 -46.9 0.3 1.1	FMI F1 -17.9 -2.8 4.8 7.1	10 F -12.5 -2.4 19.4 23.8	30 -9.9 31.9 7.3 -1.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	29.4 -5.3 31.8 -60.9	3 F1 20.8 2.1 -9.8 -19.9 -83.3	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7	-26.7 37.6 -12.6 13.7 10.2 -20.3	F21 F3 149.8 -22.6 -12.6 -41.8 34.5	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9	21.1 -35.5 -28.2 -21.1 -17.7	30 -19.8 -24.8 -19.4 -33.5 -20.0	2499.8 11113.1 665.2 728.7 272.2 177.3	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5	10 F 519.5 2219.6 74.8 81.3 25.2 44.8	122.0 630.5 28.9 30.6 24.1 43.2	F21 F3 -33.5 -46.9 0.3 1.1	FMI F1 -17.9 -2.8 4.8 7.1	10 F -12.5 -2.4 19.4 23.8	30 -9.9 31.9 7.3 -1.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene	29.4 -5.3 31.8 -60.9	3 F1 20.8 2.1 -9.8 -19.9 -83.3	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7	-26.7 37.6 -12.6 13.7 10.2 -20.3	F21 F3 149.8 -22.6 -12.6 -41.8 34.5	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9	21.1 -35.5 -28.2 -21.1 -17.7	30 -19.8 -24.8 -19.4 -33.5 -20.0	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2	122.0 630.5 28.9 30.6 24.1 43.2 28.4	F21 F3 -33.5 -46.9 0.3 1.1	FMI F1 -17.9 -2.8 4.8 7.1	10 F -12.5 -2.4 19.4 23.8	30 -9.9 31.9 7.3 -1.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	29.4 -5.3 31.8 -60.9 -20.4	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1	27.3 -17.3 -13.1 -13.1 -11.5 -24.7 -25.0 -20.2	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5	F21 F3 149.8 -22.6 -41.8 34.5 -30.8	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7	21.1 -35.5 -28.2 -21.1 -17.7 -17.8	30 -19.8 -24.8 -33.5 -20.0 -3.3	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2	F21 F3 -33.5 -46.9 0.3 1.1 -6.1	FMI F1 -17.9 -2.8 4.8 7.1 -25.5	10 F -12.5 -2.4 19.4 23.8 19.9	30 -9.9 31.9 7.3 -1.3 5.3				
Dias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	29.4 -5.3 31.8 -60.9	3 F1 20.8 2.1 -9.8 -19.9 -83.3	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5	F21 F3 149.8 -22.6 -12.6 -41.8 34.5	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9	21.1 -35.5 -28.2 -21.1 -17.7	30 -19.8 -24.8 -19.4 -33.5 -20.0	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1	F21 F3 -33.5 -46.9 0.3 1.1	FMI F1 -17.9 -2.8 4.8 7.1	10 F -12.5 -2.4 19.4 23.8	30 -9.9 31.9 7.3 -1.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[e]pyrene Benzo[e]pyrene	29.4 -5.3 31.8 -60.9 -20.4	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1	27.3 -17.3 -13.1 -13.1 -11.5 -24.7 -25.0 -20.2	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9	F21 F3 149.8 -22.6 -41.8 34.5 -30.8	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7	21.1 -35.5 -28.2 -21.1 -17.7 -17.8	30 -19.8 -24.8 -33.5 -20.0 -3.3	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2	F21 F3 -33.5 -46.9 0.3 1.1 -6.1	FMI F1 -17.9 -2.8 4.8 7.1 -25.5	10 F -12.5 -2.4 19.4 23.8 19.9	30 -9.9 31.9 7.3 -1.3 5.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene	29.4 -5.3 31.8 -60.9 -20.4	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1	27.3 -17.3 -13.1 -13.1 -11.5 -24.7 -25.0 -20.2	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9	F21 F3 149.8 -22.6 -41.8 34.5 -30.8	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7	21.1 -35.5 -28.2 -21.1 -17.7 -17.8	30 -19.8 -24.8 -33.5 -20.0 -3.3	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2	F21 F3 -33.5 -46.9 0.3 1.1 -6.1	FMI F1 -17.9 -2.8 4.8 7.1 -25.5	10 F -12.5 -2.4 19.4 23.8 19.9	30 -9.9 31.9 7.3 -1.3 5.3				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene	29.4 -5.3 31.8 -60.9 -20.4 -30.5	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1	F21 F3 149.8 -22.6 -41.8 34.5 -30.8 -40.2	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7	21.1 -35.5 -28.2 -21.1 -17.7 -17.8 -51.8	-19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8	F21 F3 -33.5 -46.9 0.3 1.1 -6.1	FMI -17.9 -2.8 4.8 7.1 -25.5 -26.6	10 F -12.5 -2.4 19.4 23.8 19.9 7.2	30 -9.9 31.9 7.3 -1.3 5.3 -18.9				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene	29.4 -5.3 31.8 -60.9 -20.4 -30.5	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7	F21 F3 149.8 -22.6 -12.6 -41.8 34.5 -30.8 -40.2 -55.3	CHMU F10 82.9 13.4 -49.4 -39.9 -63.7 -57.5 -42.6	D F: 21.1 -35.5 -28.2 -21.1 -17.7 -17.8 -51.8 -40.6	30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -28.6	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7	FMI -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2	10 F -12.5 -2.4 19.4 23.8 19.9 7.2 7.2 4.0 -26.3 -21.1	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -18.9 -10.6 -23.7 -28.4				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene Benzo[g],hjanthracene Benzo[g],hjanthracene Benzo[g],hjanthracene Benzo[g],hjanthracene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7	F21 F3 149.8 -22.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2 -47.1	CHMU F1(82.9 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3 -51.8		30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4 181.7 555.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4	FMI -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -32.5	10 F. -12.5 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -18.9 -10.6 -23.7 -28.4 -16.4				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a],h]perylene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7	F21 F3 149.8 -22.6 -12.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3		30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -28.6 -36.2	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4 181.7 555.4	3 F ¹ 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7	FMI -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2	10 F -12.5 -2.4 19.4 23.8 19.9 7.2 7.2 4.0 -26.3 -21.1	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -18.9 -10.6 -23.7 -28.4				
Dias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Benzo[g,h]anthracene Benzo[g,h]anthracene Benzo[g,h]anthracene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2 -16.3	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7	F21 F3 149.8 -22.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2 -47.1	CHMU F1(82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3 -51.8 -59.1 EERC	21.1 -35.5 -28.2 -21.1 -17.7 -17.8 -51.8 -40.6 -35.6 -40.3 -40.1	30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4 181.7 555.4	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4	FMI -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -32.5	10 F. -12.5 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6 -19.6	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -18.9 -10.6 -23.7 -28.4 -16.4				
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Dias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene Benzo[a],hjanthracene Benzo[a],hjanthracene Benzo[b],k]fluoranthene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2 -16.3	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7 -29.7	F21 F3 149.8 -22.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2 -47.1 -46.8	CHMU F1(82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3 -51.8 -59.1 EERC	21.1 -35.5 -28.2 -21.1 -17.7 -17.8 -51.8 -40.6 -35.6 -40.3 -40.1	30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4 -48.1	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4 157.4 155.4 141.7	3 F ⁻ 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-I	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.5 28.9 30.6 24.1 432 28.4 37.1 30.2 17.8 -4.6 114.0 15.4	F21 F3 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4 -30.5	FMI F17-9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -32.5 -40.6 AEA/ES	10 F -12.5 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6 -19.6 SG	30 -9.9 31.9 7.3 5.3 -18.9 -10.6 -23.7 -28.4 -16.4 -30.7 30				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]ryrene Benzo[b]ryrene Benzo[b]ryrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[b,h]perylene *Chrysene+Triphenylene *Benzo[b,J,k]fluoranthene bias %	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 F1 15.0	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -20.2 -48.3 -8.2 -16.3 0 F 8.5	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -29.7 -29.7 -29.7 14.6	F21 F3 149.8 -12.6 -12.6 -41.8 -41.8 -34.5 -30.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3 -59.1 EERC F11 -27.0	21.1 -35.5 -28.2 -21.1 -17.7 -17.8 -51.8 -40.6 -35.6 -40.3 -40.1	30 -19.8 -24.8 -19.4 -33.5 -20.0 -3.3 -42.6 -36.2 -40.4 -48.1 30 2.0	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 181.7 555.4 141.7	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4 30 -16.1	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4 -30.5 F21 F3	FMI F1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.6 -32.5 -32.5 -40.6 AEA/ES	-12.5 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6 -19.6 6G F	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -10.6 -23.7 -28.4 -16.4 -30.7				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]ryrene Benzo[b]ryrene Benzo[a]nubracene Benzo[a,h]anthracene Dibenzo[a,h]anthracene Benzo[b,j,k]perylene "Chrysene+Triphenylene "Benzo[b,j,k]fluoranthene bias % Phenanthrene Anthracene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3 61.9	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 F1	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2 -16.3 0 F	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7 -29.7	F21 F3 -49.8 -22.6 -41.8 -41.8 -41.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.2	CHMU F10 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -66.3 -51.8 -59.1 EERC EERC EERC EERC -27.0 -30.2		30 -19.8 -24.8 -19.4 -33.5 -20.0 -33.5 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4 -48.1 30 2.0 -21.4	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 181.7 555.4 141.7	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4 -30.5 F21 F3	FMI F1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.6 -32.5 -32.5 -40.6 AEA/ES	-12.5 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6 -19.6 6G F	30 -9.9 31.9 7.3 5.3 -18.9 -18.9 -10.6 -23.7 -28.4 -30.7 30 52.0				
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bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]givrene Benzo[b]givrene Benzo[b]givrene Benzo[b]givrene Benzo[b]givrene Benzo[b],i,i]perylene 'Chrysene+Triphenylene 'Benzo[b],k]fluoranthene bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[J]fluoranthene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3 61.9 -46.0 33.6 14.7 20.1	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 F1 15.0 -1.4 28.1 12.3 792.4	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2 -16.3 0 F 8.5 -43.0 -8.2 -20.6 -45.3	-26.7 37.6 -12.6 13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -49.7 -29.7 -49.7 -29.7 -49.7 -29.7	F21 F3 449.8 -22.6 -412.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.2 -59.8 -9.6 -1.0 -23.7	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -66.3 -51.8 -59.1 EERC F11 -27.0 -30.2 -8.2 -8.2 -8.2 -8.2 -17.1		30 -19.8 -24.8 -19.4 -3.3 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4 -48.1 30 2.0 -21.4 -0.5 -1.2 7.1.1	2499.8 11113.1 665.2 728.7 272.2 177.3 190.9 463.0 377.4 157.4 157.4 157.4 157.4 157.4 157.4 157.4 155.4 141.7 555.4 141.7 555.4 135.5 309.6 135.5 199.8	3 F 1390.5 6162.9 272.2 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1 2954.8 2054.8 2054.9 55.1 369.7 30.4	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4 -16.1 105.3 21.1 4.3 3.2.8 30.2	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -30.5 F21 F3 176.9 197.6 105.4 154.7 138.4 136.2	FMI F17.9 -2.8 -2.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -78.2 -40.2 F1 153.7 155.3 84.6 50.4 7.1	0 F -12.5 -2.4 -2.4 19.4 23.8 19.9 7.2 7.2 7.0 -26.3 -21.1 -15.6 -19.6 36 10 F 136.1 166.0 92.4 225.0 581.9 1086.6	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -10.6 -28.4 -16.4 -30.7 30 52.0 60.7 42.1 33.1 33.4 106.1 83.3				
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bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a,],a],a,c,d]pyrene Dibenzo[a,A],anthracene Benzo[b],k]fluoranthene Benzo[b],k]fluoranthene Benzo[b],h[fluoranthene Pyrene Benzo[b],h[fluoranthene Benzo[b],fluoranthene Benzo[b],fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 <u>F21 F3</u> 61.9 -46.0 366 147 16.4	B F1 20.8 2.1 -9.8 -19.9 -19.9 -83.3 -40.1 -19.8 -13.2 -13.2 VMM 3 715.0 -1.4 28.1 12.3 792.4 160.5 30.3 -30.3	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -20.2 -48.3 -8.2 -16.3 0 F 8.5 -43.0 -8.2 -16.3 0 - 8.5 -45.3 -45.2	-26.7 37.66 -12.6 13.7 -20.3 -15.5 -13.9 3.1 3.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -38.9 -13.6 -13.6 -13.6	F21 F3 149.8 -22.6 -41.8 -34.5 -30.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.2 -59.8 -10 -23.7 -13.0 1.0	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -66.3 -51.6 -66.3 -51.6 -66.3 -51.6 -27.0 -30.2 -30.2 -30.2 -30.2 -30.4 -17.1 -39.4		30 -19.8 -24.8 -24.8 -24.6 -28.6 -28.6 -28.6 -28.6 -28.6 -28.6 -36.2 -40.4 -44.1 30 -21.4 -2.0 -2.0 -3.3 -42.6 -2.8 -3.2 -42.6 -2.8 -3.2 -42.6 -3.3 -42.6 -2.8 -3.3 -42.6 -2.8 -3.3 -42.6 -2.8 -3.3 -42.6 -2.8 -3.3 -42.6 -3.3 -42.6 -3.3 -42.6 -3.3 -42.6 -3.3 -42.6 -3.3 -42.6 -3.3 -42.6 -3.5 -4.5 -2.0 -3.3 -4.5 -2.0 -3.3 -4.5 -2.0 -3.3 -4.5 -2.6 -3.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -4.5 -2.6 -4.5 -4.5 -2.6 -4.5 -2.6 -2.8 -4.5 -4.5 -4.5 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -2.6 -4.5 -1.5 -1.2 -1.5 -1.2 -1.5 -1.2 -1.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5 -1.2 -5.5	2499.8 11113.1 666.2 728.7 727.2 177.3 190.9 463.0 377.4 181.7 555.4 145.5 51.5 51.5 51.5 51.5 51.5 51	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1 209.4 232.3 F 106.1 50.6 50.6	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.52 30.66 24.1 43.2 28.4 30.2 17.8 -4.6 114.0 15.4 -16.1 -16.1 15.4 -16.4 -16.1 15.4 -16.4 -1	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4 -30.5 F21 F3 176.9 197.6 105.4 154.7 138.4 136.2 61.8 237.7 1583.5	FMI FF1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -40.2 -40.2 -40.2 F1 153.7 155.3 84.6 50.4 7.1 155.3 84.6 50.4 7.1	I I 0 F -12.5 -2.4 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -26.3 -26.3 -16.6 -15.6 -16.6 36 0 136.1 166.0 92.4 225.0 581.9 1086.6 606.8 101.5 239.8 101.5	-18.9 -18.9 -18.9 -18.9 -10.9 -10.6 -23.7 -28.4 -16.4 -23.7 -28.4 -16.4 -23.7 -28.4 -16.4 -33.7 -16.1 -37.4 -16.1 -37.4 -16.1 -37.4 -16.1 -37.4 -16.1 -37.4 -16.1 -37.5 -17.5				
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bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzoj[a]anthracene Chrysene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]gyrene Benzoj[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Dibenzo[a,h]anthracene Chrysene+Tiphenylene 'Benzoj[b],k]fluoranthene Benzoj[b],luoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]fluoranthene Benzoj[b]rluoranthene Benzoj[b]ruoranthene Benzoj[b]ruene Benzoj[29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3 61.9 -46.0 33.6 16.7 10.1 60.6 16.4 -27.9 -58.5	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 F1 12.3 792.4 160.5 30.3 8.9 -51.4	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -20.2 -48.3 -8.2 -16.3 0 F 8.5 -43.0 -8.2 -16.3 0 -8.2 -20.6 -8.2 -20.6 -45.3 -31.8 -45.2 -35.4 -35.4 -38.7	-26.7 37.66 -12.6 -13.7 -20.3 -15.5 -13.9 3.1 3.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -38.9 -13.6 -38.9 -13.6	F21 F3 149.8 -22.6 -41.8 -41.8 -41.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.2 -59.8 -30.6 -10 -23.7 -13.0 1.0 -0.8 98.9	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -66.3 -51.6 -66.3 -51.6 -66.3 -51.6 -66.3 -51.7 -72.0 -30.2 -30.2 -3.2 -3.2 -3.2 -3.2 -17.1 -39.4 -1.4 -1.4 -1.4		30 -19.8 -24.8 -24.8 -24.8 -20.0 -3.5 -20.0 -3.5 -20.0 -3.3 -42.6 -36.2 -40.4 -48.1 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -3.5 -5.5 -5.	2499.8 11113.1 666.2 728.7 727.2 177.3 190.9 463.0 377.4 181.7 555.4 141.7 F21 F -20.5 309.6 136.3 633.5 199.8 -68.2	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1 209.1 209.1 209.4 232.3 F 106.1 209.4 232.3 19.6 106.1 50.6 149.3	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.55 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4 30 -16.1 105.3 21.1 32.1 32.8 32.8 32.8 10.0 136.0 6.0 22.7 4.6 32.6 32.6	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -30.5 F21 F3 176.9 197.6 105.4 154.7 138.4 136.2 61.8 237.7 1583.5 91.3	FMI FF1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -28.8 -78.2 -40.2 F1 153.7 155.3 94.6 50.4 7.1 155.3 94.6 50.4 7.1 65.9 166.8 10.9	IO F -12.5 -2.4 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -21.1 -15.6 36 0 136.1 166.0 92.4 225.0 581.9 108.6.8 101.5 239.8 830.7 832.5	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -10.6 -23.7 -28.4 -16.4 -23.7 -28.4 -16.4 -33.7 42.1 33.7 42.1 33.7 42.1 33.4 106.1 83.3 80.7 18.1 44.2 61.5 37.6 53.6 -1.5 -				
bias % Phenanthrene Anthracene Fluoranthene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]rene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[b,h]perylene "Chrysene+Triphenylene "Benzo[b],fluoranthene Benzo[a]anthracene Fluoranthene Benzo[a]anthracene Benzo[a]anthracene Benzo[a]nthracene Benzo[a]nthracene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]rluoranthene Benzo[b]fluoranthene Benzo[b]rene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3 61.9 -46.0 33.6 14.7 20.1 60.8 16.4 -27.9	 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 -14 -14 -14 -14 -14 -14 -14 -16.5 30.3 8.9 	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -25.0 -20.2 -48.3 -8.2 -16.3 0 F -8.5 -43.0 -8.2 -16.3 -8.2 -16.3 -8.2 -3.2 -45.2 -45.2 -35.4	-26.7 37.66 -12.6 -13.7 10.2 -20.3 -15.5 -13.9 3.1 3.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -23.9 -13.6 -23.9 -13.6 -23.9 -23.5	F21 F3 149.8 -22.6 -41.8 34.5 -30.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.8 F21 F3 -1.0 -23.7 -13.0	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -42.6 -66.3 -51.8 -51.8 -51.8 -59.1 EERC F11 -27.0 -30.2 -8.0 -30.2 -39.4 -39.5 -39.4 -39.5 -30.5 -30		30 -19.8 -24.8 -24.8 -24.6 -36.5 -20.0 -3.3 -42.6 -28.6 -36.2 -40.4 -48.1 30 -21.4 -48.1 30 -21.4 -1.2 7.11 28.9 -6.3 -2.4.4 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -2.4.8 -3.5 -3	2499.8 11113.1 666.2 728.7 727.2 177.3 190.9 463.0 377.4 181.7 555.4 145.5 51.5 51.5 51.5 51.5 51.5 51	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1 209.4 232.3 F 106.1 50.6 50.6	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.5 830.5 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4 30 -16.1 105.3 21.1 4.3 32.8 10.1 36.0 6.0 22.7 4.6	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -37.7 -27.4 -30.5 F21 F3 176.9 197.6 105.4 154.7 138.4 136.2 61.8 237.7 1583.5	FMI FF1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -40.2 -40.2 -40.2 F1 153.7 155.3 84.6 50.4 7.1 155.3 84.6 50.4 7.1	7.2 4.0 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -15.6 -19.6 3G 0 7.2 166.6 606.8 101.5 23.8 830.7	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -10.6 -23.7 -23.7 -26.4 -23.7 -26.4 -26.7 52.0 60.7 42.1 33.1 37.4 106.1 83.3 80.7 18.1 14.2 61.5				
bias % Phenanthrene Anthracene Fluoranthene Pyrene Benzo[]luoranthene Benzo[]luoranthene Benzo[]luoranthene Benzo[]luoranthene Benzo[]lyuoranthene Benzo[]pyrene Benzo[]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Chrysene+Tiphenylene "Benzo[b,jk]luoranthene Benzo[b,h]luoranthene Benzo[b,h]luoranthene Benzo[b,h]luoranthene Benzo[b]nuoranthene Benzo[b]nuoranthene Benzo[b]ruoranthene Benzo[]pyrene Dibenzo[a,h]anthracene	29.4 -5.3 31.8 -60.9 -20.4 -30.5 18.1 -14.1 F21 F3 61.9 -46.0 33.6 10.7 10.7 60.6 16.4 -27.9 -58.5	3 F1 20.8 2.1 -9.8 -19.9 -83.3 -40.1 0.2 -19.8 -13.2 VMM 3 F1 12.3 792.4 160.5 30.3 8.9 -51.4	0 F 27.3 -17.3 -13.1 4.4 -11.5 -24.7 -20.2 -48.3 -8.2 -16.3 0 F 8.5 -43.0 -8.2 -16.3 0 - 8.2 -20.6 -8.2 -20.6 -45.3 -31.8 -45.2 -35.4 -35.4 -38.7	-26.7 37.66 -12.6 -13.7 -20.3 -15.5 -13.9 3.1 3.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -29.7 -38.9 -13.6 -38.9 -13.6	F21 F3 149.8 -22.6 -41.8 -41.8 -41.8 -40.2 -55.3 -63.2 -47.1 -46.8 F21 F3 -46.2 -59.8 -30.6 -10 -23.7 -13.0 1.0 -0.8 98.9	CHMU F11 82.9 13.4 -24.9 -49.4 -39.9 -63.7 -57.5 -66.3 -51.6 -66.3 -51.6 -66.3 -51.6 -66.3 -51.7 -27.0 -30.2 -30.2 -3.2 -3.2 -3.2 -17.1 -39.4 -1.4 -1.4 -1.4		30 -19.8 -24.8 -24.8 -24.8 -20.0 -3.5 -20.0 -3.5 -20.0 -3.3 -42.6 -36.2 -40.4 -48.1 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -0.5 -1.4 -3.5 -5.5 -5.	2499.8 11113.1 666.2 728.7 727.2 177.3 190.9 463.0 377.4 181.7 555.4 141.7 F21 F -20.5 309.6 136.3 633.5 199.8 -68.2	3 F 1390.5 6162.9 272.2 180.7 44.7 -9.5 121.8 197.9 146.4 33.9 29.4 232.3 19.6 EPA-1 3 F 106.1 209.1 209.1 209.4 232.3 F 106.1 209.4 232.3 19.6 106.1 50.6 149.3	10 F 519.5 2219.6 74.8 81.3 25.2 44.8 20.2 65.0 35.1 12.6 4.5 288.1 4.9 ie	122.0 630.55 28.9 30.6 24.1 43.2 28.4 37.1 30.2 17.8 -4.6 114.0 15.4 30 -16.1 105.3 21.1 32.1 32.8 32.8 32.8 10.0 136.0 6.0 22.7 4.6 32.6 32.6	F21 F3 -33.5 -46.9 0.3 1.1 -6.1 -20.8 -13.9 -70.4 -30.5 F21 F3 176.9 197.6 105.4 154.7 138.4 136.2 61.8 237.7 1583.5 91.3	FMI FF1 -17.9 -2.8 4.8 7.1 -25.5 -26.6 -28.8 -78.2 -40.2 -28.8 -78.2 -40.2 F1 153.7 155.3 94.6 50.4 7.1 155.3 94.6 50.4 7.1 65.9 166.8 10.9	IO F -12.5 -2.4 -2.4 19.4 23.8 19.9 7.2 4.0 -26.3 -21.1 -21.1 -15.6 36 0 136.1 166.0 92.4 225.0 581.9 108.6.8 101.5 239.8 830.7 832.5	30 -9.9 31.9 7.3 -1.3 5.3 -18.9 -10.6 -23.7 -28.4 -16.4 -23.7 -28.4 -16.4 -33.7 42.1 33.7 42.1 33.7 42.1 33.4 106.1 83.3 80.7 18.1 44.2 61.5 37.6 53.6 -1.5 -				

Table 11.– En values

			IVL				LANU	JV			NERI		1	ABUM				ERLAP		
En	F21	F3	F10	F30)	F21 F	'3 F	10	F30	F21 F3	F10	F30	F21 F	3 F10) F3	0	F21 F3	F10	F30	
Phenanthrene		-0.7	-0.9	-0.8	-0.5								-1.4	-1.4	-1.6	0.0	1.0	0.8	0.5	1.5
Anthracene		-0.8	-0.6	-0.9	-0.8								-1.0	-0.8	-1.4	-0.4	-0.2	-0.3	-0.3	-0.1
Fluoranthene		-0.2	-0.5	-0.4	-0.5								-2.1	-1.9	-1.6	0.1	0.8	0.1	0.4	0.8
Pyrene		-0.7	-0.4	-0.4	-0.4								-1.8	-1.4	-1.5	-0.4	0.4	0.5	0.2	0.9
Benzo[a]anthracene				-0.5	-4.0	-1.0	-0.8	-0.3	0.0				-0.8	-1.3	-1.1	0.2	-0.1	-0.6	0.5	0.1
Chrysene		-0.7	-0.5	0.0	-0.2								-0.8	-0.7	-0.4	0.6				
Benzo[b]fluoranthene		-0.2	0.3	0.0	-0.3	-0.5	0.9	-0.2	0.0								0.5	0.6	0.1	1.1
Benzo[j]fluoranthene								0.6	0.7								0.3	0.2	-0.2	-0.2
Benzo[k]fluoranthene		-0.3	-0.4	-0.2	-0.7	-0.7	0.2	-0.6	0.1				-0.9	-0.8	-1.1	-0.4	0.7	1.1	0.6	1.4
Benzo[e]pyrene													-0.6	-0.4	-1.0	0.4	-0.4	0.2	-0.2	-0.1
Benzo[a]pyrene		-0.2	-0.8	0.0	-0.4	-0.5	-0.4	-0.1	0.7				-0.8	-0.9	-0.8	0.5	-0.1	-0.4	0.6	0.2
Perylene													-0.5	-0.3	-1.0	-0.6	0.7	0.3	-0.2	0.4
Indeno[1,2,3,-c,d]pyrene		0.2	-0.7	0.2	-0.6	-1.2	1.1	0.6	1.4				-0.4	-0.2	-1.0	-0.2	0.8	0.1	0.6	0.1
Dibenzo[a,h]anthracene		-0.6	-0.6	0.3	0.9	-1.1	-0.8	-0.9	0.3				-0.8	-0.7	-0.5	-0.3	-0.9	-0.9	-0.7	0.5
Benzo[g,h,i]perylene		0.3	-0.2	0.4	0.4								-1.4	-1.2	-1.3	0.6	-0.4	-0.5	-0.1	-0.3
*Chrysene+Triphenylene						1.0							0.1	-0.2	-0.3	0.7	0.9	0.9	0.4	0.0
*Benzo[b.j,k]fluoranthene						-1.0	-0.6	0.2	0.9				-0.5	-0.5	-1.7	-0.6	0.7	0.0	0.6	0.7
_			EPA-LT				AWE				EEA			KAL				ERLAP#T		
En	F21	F3	F10	F30)	F21 F	3 F	10	F30	F21 F3	F10	F30	F21 F	3 F10) F3	U	F21 F3	F10	F30	
Phenanthrene										5.6	3.9	4.1 2.	<i>'</i>				0.3	1.2	2.2	0.2
Anthracene		1.3	2.1	0.9	0.6					4.5	4.3	4.1 1.					0.6	-1.3	2.5	-1.0
Fluoranthene						4.0	3.1	1.9	-0.1	12.4	7.8	7.1 4.					0.7	0.9	1.5	1.0
Pyrene						4.2	3.1	2.0	-0.3	4.9	3.5	3.3 2.					0.6	0.8	1.3	1.0
Benzo[a]anthracene		1.4	3.7	1.9	0.1			1.1	0.2	3.9	-0.6	3.1 2.			-0.3	-0.1	-0.6	-0.8	1.3	-0.1
Chrysene		0.0	0.8	0.4	0.1			1.4	0.7	0.9	-0.4	1.4 1.	2							0.5
Benzo[b]fluoranthene		1.5	3.9	1.1	-0.1			2.6	2.2	2.3	2.1	2.4 2.	1				-0.1	0.4	-0.1	0.8
Benzo[j]fluoranthene													.1				-0.3	-0.3	-0.5	-0.5 0.7
Benzo[k]fluoranthene		1.1	3.2	1.0	-0.1			0.5	0.4	0.1	0.8	1.2 -0.	1				-0.4	-0.2	0.4	
Benzo[e]pyrene													-				-0.9	-0.8	0.6	-0.2
Benzo[a]pyrene		0.9	2.9	1.2	0.3			1.0	0.2	1.3	0.0	0.8 0.	U		-0.2	-0.4	-0.4	-0.6	2.5	0.5
Perylene																	-0.2	-0.6	0.7	0.1
Indeno[1,2,3,-c,d]pyrene		1.8	3.5	0.8	0.0			1.0	0.1						0.2	0.2	-0.6	-1.2	0.0	-0.5
Dibenzo[a,h]anthracene		1.5	2.2	1.1	0.4				0.5	0.7	4.5		_		0.8	0.1	-1.1	-0.9	-1.4	-0.8
Benzo[g,h,i]perylene		1.5	2.1	-0.4	0.1			1.0	-0.1	-0.7	-1.5	1.1 0.	3				-0.6	-0.4	1.7	1.4
*Chrysene+Triphenylene *Benzo[b.j,k]fluoranthene						2.5		1.5	0.6				0.9	0.8	0.0	0.0	-0.2 -0.3	0.0 -0.4	0.6 0.4	0.4
Denzo[b.j,kjildoraninene						2.5	CL		0.6		10000		0.0		0.0	-0.3	=0.3	-0.4	0.4	0.1
	E01	E2	APA-LRA		,		CHM	U		E21 50	ISSeP	E20		FMI			-0.3	-0.4	0.4	0.1
En	F21	F3	APA-LRA F10	F30)	F21 F	3 F	U 10	F30	F21 F3	F10	F30	F21 F	FMI 3 F10) F3	0	-0.3	-0.4	0.4	0.1
En Phenanthrene	F21	F3)	F21 F 1.5	3 F 1.2	U 10 0.4	F30 -0.6	4.1	F10 4.0	3.6 2.	F21 F 3 -0.5	FMI 3 F10 -0.2	-0.2	-0.4	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene	F21	F3)	F21 F 1.5 -0.4	3 F 1.2 0.3	U 10 0.4 -1.2	F30 -0.6 -1.2	4.1 3.4	F10 4.0 3.4	3.6 2. 3.3 3.	F21 F 3 -0.5 0 -0.7	FMI 3 F10 -0.2 0.0	-0.2 0.0	0 -0.4 0.5	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene	F21	F3)	F21 F 1.5 -0.4 -0.4	3 F 1.2 0.3 -0.9	U 10 -1.2 -1.0	F30 -0.6 -1.2 -0.7	4.1 3.4 4.5	F10 4.0 3.4 3.8	3.6 2. 3.3 3. 2.1 1.	F21 F 3 -0.5 0 -0.7 1 0.0	FMI 3 F10 -0.2 0.0 0.1	-0.2 -0.2 0.0 0.4	0 -0.4 0.5 0.4	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3	3 F 1.2 0.3 -0.9 -3.8	U 10 -1.2 -1.0 -1.1	F30 -0.6 -1.2 -0.7 -2.7	4.1 3.4 4.5 4.1	F10 4.0 3.4 3.8 3.0	3.6 2. 3.3 3. 2.1 1. 2.0 1.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0	U 10 -1.2 -1.0 -1.1 -0.7	F30 -0.6 -1.2 -0.7 -2.7 -1.0	4.1 3.4 4.5 4.1 2.5	F10 4.0 3.4 3.8 3.0 0.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1	FMI 3 F10 -0.2 0.0 0.1	-0.2 -0.2 0.0 0.4	0 -0.4 0.5 0.4	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3	3 F 1.2 0.3 -0.9 -3.8	U 10 -1.2 -1.0 -1.1	F30 -0.6 -1.2 -0.7 -2.7	4.1 3.4 4.5 4.1 2.5 2.0	F10 4.0 3.4 3.8 3.0 0.8 -0.1	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 1	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.5	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0	U 10 -1.2 -1.0 -1.1 -0.7	F30 -0.6 -1.2 -0.7 -2.7 -1.0	4.1 3.4 4.5 4.1 2.5 2.0 2.5	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0	U 10 -1.2 -1.0 -1.1 -0.7	F30 -0.6 -1.2 -0.7 -2.7 -1.0	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1.	F21 F 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8 1	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0	U 10 -1.2 -1.0 -1.1 -0.7	F30 -0.6 -1.2 -0.7 -2.7 -1.0	4.1 3.4 4.5 4.1 2.5 2.0 2.5	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0.	F21 F 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8 1	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]gluoranthene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6	U 10 -1.2 -1.0 -1.1 -0.7 -0.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1. 0.7 0.	F21 F 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 1 8 8 8	FMI 3 F10 -0.2 0.0 0.1 0.1 -0.5) F3 -0.2 0.0 0.4 0.3 0.4	0 -0.4 0.5 0.4 -0.1 0.2	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[e]pyrene Benzo[e]pyrene	F21	F3			9	F21 F 1.5 -0.4 -0.4 -2.3 0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0	U 10 -1.2 -1.0 -1.1 -0.7	F30 -0.6 -1.2 -0.7 -2.7 -1.0	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1.	F21 F 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8 8 8	FMI 3 F10 -0.2 0.0 0.1 0.1	0 F3 -0.2 0.0 0.4 0.3	0 -0.4 0.5 0.4 -0.1	-0.3	*0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene	F21	F3			0	F21 F 1.5 -0.4 -2.3 0.8 -0.5 -1.9	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6	U 10 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1. 0.6 0. 2.1 1. 0.7 0. 0.3 0.	F21 F2 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8 8 5 -0.8	FMI 3 F10 -0.2 0.0 0.1 0.1 -0.5 -1.0	0 F3 -0.2 0.0 0.4 0.3 0.4 0.2	0 -0.4 0.5 0.4 -0.1 0.2 -1.7	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[ljfluoranthene Benzo[ljfluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7	U 10 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1. 0.7 0. 0.3 0. 0.2 -0.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 1 8 5 -0.8 2 -0.3	FMI 3 F10 -0.2 0.0 0.1 -0.5 -1.0 -0.7	-0.2 0.0 0.4 0.3 0.4 0.4 0.2 0.2	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -1.9 -1.0	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8	U 10 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2 2.5 2.5 2.8	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 1.0 1. 0.6 0. 2.1 1. 0.6 0. 0.7 0. 0.3 0. 0.3 0. 2.7 1.	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	FMI 3 F10 -0.2 0.0 0.1 0.1 -0.5 -1.0 -0.7 -0.9	0 F3 -0.2 0.0 0.4 0.3 0.4 0.2 0.2 0.1 -0.6	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a],h]perylene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7	U 10 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.6 0. 2.1 1. 0.7 0. 0.3 0. 0.2 -0.	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	FMI 3 F10 -0.2 0.0 0.1 -0.5 -1.0 -0.7	-0.2 0.0 0.4 0.3 0.4 0.4 0.2 0.2	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2	-U.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene	F21	F3)	F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -1.9 -1.0	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8	U 10 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2 2.5 2.5 2.8	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 1.0 1. 0.6 0. 2.1 1. 0.6 0. 0.7 0. 0.3 0. 0.3 0. 2.7 1.	F21 F F21 F 0 -0.5 0 -0.7 1 0.0 1 0.0 7 -0.1 8 5 -0.8 2 -0.8 8 -1.0 5 -1.1	FMI 3 F10 -0.2 0.0 0.1 0.1 -0.5 -1.0 -0.7 -0.9 -1.2	0 F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.2 0.2 0.1 -0.6 -0.5	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9 -0.8	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene	F21	F3			2	F21 F 1.5 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -0.6 -2.7 -2.7 -2.2 -0.8 -2.3	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1	4.1 3.4 4.5 4.1 2.5 2.0 2.5 4.4 2.8 2.2 2.5 2.5 2.8	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8	3.6 2. 3.3 3. 2.1 1. 2.0 1. 1.0 1. 0.6 0. 2.1 1. 0.6 0. 0.7 0. 0.3 0. 0.3 0. 2.7 1.	F21 F 3 -0.5 0 -0.7 1 0.0 1 0.0 1 0.0 1 8 5 -0.8 2 -0.3 5 -1.0 5 -0.7	FMI 3 F10 -0.2 0.0 0.1 -0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7	0 F3 -0.2 0.0 0.4 0.3 0.4 0.2 0.1 -0.6 -0.5 -0.5 -0.8	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9 -0.8 -0.8	-0.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene Benzo[g],h]anthracene		F3	F10			F21 F 1.5 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8 -2.3 -1.6 EER	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 0.8 1.8 0.5	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.9	FMI 3 F10 -0.2 0.0 0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -1.0 AEA/ESG	0 F3 -0.2 0.0 0.4 0.3 0.4 0.2 0.4 0.2 0.1 -0.6 -0.5 -0.5 -0.8 3	0 -0.4 -0.5 0.4 -0.1 0.2 -0.2 -0.9 -0.8 -0.9 -1.5	- 	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]pyrene Perylene Perylene Dibenzo[a,h]anthracene Benzo[b,j,k]fluoranthene "Benzo[b,j,k]fluoranthene En	F21	F3	F10 VMM F10	F30		F21 F 1.5 -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 F	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C 10	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 1.0 1. 0.6 0. 2.1 1. 0.6 0. 0.7 0. 0.3 0. 0.3 0. 2.7 1.	F21 F 3 -0.5 -0.7 -0.7 1 0.0 7 -0.1 8 -0.5 -0.5 -0.8 2 -0.3 5 -0.8 2 -0.3 5 -1.0 -0.7 -0.9	FMI 3 F10 -0.2 0.1 0.1 -0.5 -1.0 -0.7 -0.7 -1.0 AEA/ESG 3 F10	0 F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.1 -0.6 -0.5 -0.5 -0.5 -0.8 3 0 F3	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9 -0.9 -0.9 -0.9 -0.9 -1.5	-U.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hanthracene Benzo[d],n]perylene 'Chrysene+Triphenylene 'Benzo[b],k]fluoranthene En Phenanthrene		F3 1.4	F10 VMM F10 0.5	F30	0.7	F21 F -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 F -1.1	U 10 0.4 -1.2 -1.0 -1.1 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.9	FMI 3 F10 -0.2 0.0 0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -1.0 AEA/ESG	0 F3 -0.2 0.0 0.4 0.3 0.4 0.2 0.4 0.2 0.1 -0.6 -0.5 -0.5 -0.8 3	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.8 -0.9 -1.5 0 1.6		-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]pyrene Porozo[a]pyrene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b,j,k]fluoranthene "Benzo[b,j,k]fluoranthene En Phenanthrene Anthracene		F3 1.4 -0.7	VMM 510 VMM 510 0.5 0.0	F30	0.7	F21 F -1.5 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 -0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -2.7 -0.8 -1.0 -0.8 -1.0 -0.9 -0.8 -0.9 -0.8 -0.9 -0.	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.0 -2.5 -1.0 -2.2 -1.9 C 10 -0.5 0.0	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 3 -0.5 3 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.9 7 -0.9 7 2.6	FMI 3 F10 -0.2 0.0 0.1 0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -1.0 AEA/ESG 3 F10 2.8	0.2 0.4 0.3 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.5 -0.6 -0.5 -0.8 3 0.7 F3 2.7	0 -0.4 0.5 0.4 -0.1 0.2 -0.2 -0.9 -0.9 -0.9 -0.9 -1.5 0 1.6 1.6	-U.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],hjanthracene Benzo[a],hjanthracene Benzo[b],k]fluoranthene En Phenanthrene Anthracene Fluoranthrene		F3 1.4 -0.7 1.5	VMM F10 VMM F10 0.5 0.0 1.3	F30 F30 0.3 -1.3 -0.4	0.7 -1.1 -0.3	F21 F -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -1.9 -0.8 -1.9 -0.8 -1.9 -0.8 -1.9 -0.8 -1.1 -0.8 -0.8	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 F -1.1 -0.4 -0.4 -0.4	U 10 0.4 -1.2 -1.0 -1.1 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 1.0 -0.5	F30 -0.6 -1.2 -0.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.3 8 -1.0 5 -0.3 8 -1.0 5 -1.1 -0.7 -0.9 F21 F 2.6 3.3	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.5 3 F10 -0.5 -0.7 -0.9 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.7 -0.5 -0.7	0.2 0.2 0.4 0.2 0.4 0.3 0.4 0.4 0.2 0.1 -0.6 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.7 3.0 F3	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.9 -0.9 -0.8 -0.9 -0.8 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4		-0.4	0.4	0
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]gyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b,j,k]fluoranthene En Phenanthrene Anthracene Fluoranthene Pyrene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6	F30 F30 0.3 -1.3 -0.4 -1.0	0.7 -1.1 -0.3 -0.7	F21 F -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -1.9 -1.5 -1.9 -1.5 -1.0 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.1	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 F -1.1 -0.6 -0.6	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.2 -1.9 C 10 -0.5 0.0 0.4 -1.2 -1.2 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -1.1 -0.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -0.5 -1.0 -0.5 -1.0 -0.5 -1.0 -0.5 -	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.9 F21 F 6 3.3 2.4 -0.3	FMI 3 F10 0.2 0.0 0.1 0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.2 -0.5 -1.2 -0.5 -0.7 -0.5 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -2.8 -0.0 -2.8 -0.0 -2.8 -0.0 -2.8 -0.0 -2.2 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5	0.2 0.4 0.4 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9 -0.8 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9	-U.3	-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b],r]n]perylene 'Chrysene+Triphenylene 'Benzo[b],k]fluoranthene En Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[a]anthracene Benzo[a]anthracene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3	F30 F30 0.3 -1.3 -0.4 -1.0 -0.4 -2.5	0.7 -1.1 -0.3 -0.7 -3.5	F21 F -0.4 -0.4 -2.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 F21 F -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.1 -1.5 -0.4 -2.1 -1.5 -0.	3 F 1.2 1.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.6 -0.6 -2.7 -2.7 -2.7 -0.8 -2.3 -0.6 -0.4 -0.6 -0.5	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 10 0.0 0.9 0.3	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.3 -0.1 0.5	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.3 8 -1.0 5 -0.3 8 -1.0 5 -1.1 -0.7 -0.9 F21 F 2.6 3.3 2.4 2.6	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7	0.2 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4 1.2 1.3		-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Indeno[1,2,3,3,c,d]pyrene Indeno[1,2,3,3,c,d]pyrene Chrysene+Triphenylene "Benzo[b,jk]fluoranthene En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6	F30 F30 0.3 -1.3 -0.4 -1.0	0.7 -1.1 -0.3 -0.7	F21 F -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -1.9 -1.5 -1.9 -1.5 -1.0 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.1	3 F 1.2 0.3 -0.9 -3.8 -1.0 -0.6 -2.7 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 F -1.1 -0.6 -0.6	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.2 -1.9 C 10 -0.5 0.0 0.4 -1.2 -1.2 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -1.1 -0.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -2.5 -1.0 -0.5 -1.0 -0.5 -1.0 -0.5 -1.0 -0.5 -	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.9 F21 F 6 3.3 2.4 -0.3	FMI 3 F10 0.2 0.0 0.1 0.1 -0.5 -1.0 -0.7 -0.9 -1.2 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.2 -0.5 -1.2 -0.5 -0.7 -0.5 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -2.8 -0.0 -2.8 -0.0 -2.8 -0.0 -2.8 -0.0 -2.2 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5 -0.5 -2.8 -0.5 -2.8 -0.5 -2.5	0.2 0.4 0.4 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	0 -0.4 0.5 0.4 -0.1 0.2 -1.7 -0.2 -0.9 -0.8 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9	-U.3	-0.4		0
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b],h]anthracene Benzo[b],k]fluoranthene En Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[a]anthracene Chrysene Benzo[a]anthracene Chrysene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3	F30 F30 0.3 -1.3 -0.4 -1.0 -0.4 -2.5	0.7 -1.1 -0.3 -0.7 -3.5	F21 F -0.4 -0.4 -2.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 F21 F -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.1 -1.5 -0.4 -2.1 -1.5 -0.	3 F 1.2 1.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.6 -0.6 -2.7 -2.7 -2.7 -0.8 -2.3 -0.6 -0.4 -0.6 -0.5	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 10 0.0 0.9 0.3	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.3 -0.1 0.5	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.3 8 -1.0 5 -0.3 8 -1.0 5 -1.1 -0.7 -0.9 F21 F 2.6 3.3 2.4 2.6	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.7 -0.9 -1.2 -0.7	0.2 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.4	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4 1.2 1.3		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]ryene Dibenzo[a,h]anthracene Bohzo[g],h]anthracene Benzo[b],k]fluoranthene En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3	F30 F30 0.3 -1.3 -0.4 -1.0 -0.4 -2.5	0.7 -1.1 -0.3 -0.7 -3.5	F21 F -0.4 -0.4 -2.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 F21 F -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.1 -1.5 -0.4 -2.1 -1.5 -0.	3 F 1.2 1.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.6 -0.6 -2.7 -2.7 -2.7 -0.8 -2.3 -0.6 -0.4 -0.6 -0.5	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 10 0.0 0.9 0.3	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.3 -0.1 0.5	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.1	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 5 -1.1 -0.7 -0.7 -0.7 -0.3 5 -1.1 -0.7 -0.9 F21 F 2.6 3.3 2.4 2.6 1.9 1.9	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.9 -1.2 -0.7 -0.7 -0.7 -0.9 -1.2 -0.7) F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 -0.6 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.9 -0.9 -0.9 -0.9 -1.5 1.6 1.6 1.4 1.2 1.3 2.4		-0.4		
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b]pyrene Benzo[b],h]anthracene Benzo[b],h]anthracene Benzo[b],k]fluoranthene En Phenanthrene Anthracene Fluoranthrene Pyrene Benzo[b],k]fluoranthene Benzo[b]fluoranthene		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3	F30 F30 0.3 -1.3 -0.4 -1.0 -0.4 -2.5	0.7 -1.1 -0.3 -0.7 -3.5	F21 F -0.4 -0.4 -2.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 F21 F -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.1 -1.5 -0.4 -2.1 -1.5 -0.	3 F 1.2 1.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.6 -0.6 -2.7 -2.7 -2.7 -0.8 -2.3 -0.6 -0.4 -0.6 -0.5	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 10 0.0 0.9 0.3	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.3 -0.1 0.5	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.1 8 -0.5 2 -0.3 8 -1.0 5 -0.7 5 -0.3 8 -1.0 5 -1.1 -0.7 -0.9 F21 F 2.6 3.3 2.4 2.6 1.9 2.3	FMI -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -	F3 -0.2 0.0 0.0 0.0 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.5 -0.6 -0.6 -0.5 -0.8 3 2.7 3.0 2.2,3.4 4.2 4.6 4.6	0 -0.4 0.5 0.4 -0.1 0.2 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9		-0.4		
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b],k]fluoranthene Benzo[b]fluoranthene En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[k]fluoranthene		F3 1.4 -0.7 -0.7 -0.6 -0.6 -0.6 -1.0	VMM F10 0.5 0.0 0.3 0.6 5.3 1.5	F30 F30 0.3 -1.3 -0.4 -1.0 -2.5 -1.0	0.7 -1.1 -0.3 -0.7 -3.5 -0.6	F21 F -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -1.9 -2.1 -2.1 -2.1 -1.5 F21 F -1.1 -0.8 -0.8 -0.8 -0.2	3 F 12 12 13 12 12 12 12 12 12 12 12 12 12	U 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.0 -1.1 -0.7 -0.5 -1.0 -1.1 -0.7 -0.5 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -1.5	F30 -0.6 -1.2 -7.7 -7.7 -7.7 -1.0 -1.6 -1.6 -2.2 -2.1 -2.4 F30 0.1 0.5 1.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	FMI 3 F10 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.	F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.5 -0.6 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.5 -0.7	-0.4 0.5 0.4 -0.5 0.4 -0.5 0.5 -0.4 -0.5 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -1.5 0 1.6 1.6 1.4 1.3 2.4 2.1 2.2		-0.4	0.4	0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b],fluoranthene Benzo[b],fluoranthene En Phenanthrene Anthracene Fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthe		F3 1.4 -0.7 1.5 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3	F30 F30 0.3 -1.3 -0.4 -1.0 -0.4 -2.5	0.7 -1.1 -0.3 -0.7 -3.5	F21 F -0.4 -0.4 -2.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -1.5 F21 F -1.1 F21 F -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.1 -1.5 -0.4 -2.1 -1.5 -0.	3 F 1.2 1.2 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.6 -0.6 -2.7 -2.7 -2.7 -0.8 -2.3 -0.6 -0.4 -0.6 -0.5	U 10 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 10 0.0 0.9 0.3	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.3 -0.1 -0.3 -0.1 0.5	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 3 -0.5 3 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.7 8 -0.7 9 -0.7 8 -1.0 5 -0.8 2 -0.3 8 -1.0 -0.7 -0.9 F21 F 2.4 2.4 2.3 0.8 3.4 3.4	FMI -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -0.7 -0.9 -0.7 -) F3 -0.2 0.0 0.4 0.3 0.4 0.3 0.4 0.4 0.5 0.6 -0.6 -0.5 -0.8 2.7 3.0 2.2 3.4.2 4.6 4.2 2.1	0 -0.4 0.5 0.4 -0.1 0.2 -0.7 -0.2 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4 1.2 1.3 2.4 2.1 2.2 0.7		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]ghvene Benzo[b]ghvene Benzo[b]ghvene Benzo[a]pyrene Benzo[a,b]anthracene Chrysene+ Triphenylene "Benzo[b,k]fluoranthene Benzo[b,k]fluoranthene En Phenanthrene Anthracene Fluoranthene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[b]ghvene Benzo[b]fluoranthene Benzo[b]ghvene Benzo[b]ghvene Benzo[b]ghvene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene		F3 1.4 -0.7 1.6 0.6 1.0 0.6	VMM F10 0.5 0.0 1.3 0.6 5.3 1.5 1.0	F30 0.3 -1.3 -0.4 -1.0 -2.5 -1.0	0.7 -1.1 -0.3 -0.7 -3.5 -0.6	F21 F 1.5 -0.4 -0.3 -0.3 -0.5 -1.9 -1.9 -3.3 -1.0 -2.1 -2.1 -2.1 -1.5 F21 F -1.1 -0.8 -0.8 -0.2 0.0 0.0 0.0	3 F 1.2 1.2 1.2 1.2 1.2 -0.3 -0.9 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 -0.4 -0.6 -0.4 -0.6 -0.5 -0.4 -0.5 -0.4 -0.6 -0.4 -0.6 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -0.4 -0.4 -0.4 -0.4 -0.5 -0.4 -0.4 -0.5 -0.4 -0.4 -0.5 -0.4 -0.4 -0.4 -0.4 -0.4 -0.5 -0.4 -0.4 -0.4 -0.5 -0.4 -0.4 -0.5 -0.5 -0.4 -0.5	U 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.0 -1.1 -0.7 -0.5 -1.0 -1.1 -0.7 -0.5 -1.0 -1.2 -1.0 -1.2 -1.0 -1.2 -0.5 -1.5	F30 -0.6 -1.2 -7.7 -7.7 -7.7 -1.0 -1.0 -1.0 -1.0 -2.1 -2.1 -2.4 F30 0.1 -0.5 1.1 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 5 -0.8 2 -0.3 5 -1.1 5 -0.3 6 -1.0 5 -0.3 6 -1.0 5 -0.3 6 -1.0 5 -1.1 5 -2.6 3.3 2.4 2.3 0.8 3.4 2.3 0.8 3.4 4.6 4.6	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.1 -0.1 -0.1 -0.1 -0.9 -) F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.7 -0.0 -0.2 -0.2 -0.4 -0.2 -0.5 -0.5 -0.5 -0.5 -0.6 -0.5 -0.7	0 -0.4 0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Benzo[lyfluoranthene Perjelne 'Chrysene+Triphenylene 'Chrysene+Triphenylene 'Chrysene Benzo[lyfluoranthene Benzo[lyfluorant		F3 1.4 0.7 1.5 0.6 0.6 1.0 -1.5	VMM F10 0.5 0.0 0.3 1.5 1.5 1.0 0.4	F30 F30 0.3 -1.3 -1.0 -2.5 -1.0 -1.6 -2.4	0.7 -1.1 -0.3 -0.6 -0.6 0.4 2.2	F21 F -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1 -0.8 -0.1 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.3 -0.4 -2.3 -0.4 -2.5 -0.4 -2.5 -0.5	3 12 12 12 13 12 12 10 10 10 10 -0.6 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 -1.1 -0.4 -0.6 -0.4 -0.6 -0.4 -0.	U 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -1.0 -2.2 -1.9 C -0.5 0.0 0.9 0.3 1.5 -0.4 -0.7 -0.4 -0.7 -0.4 -0.7 -0.7 -0.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.1 -0.1 -0.1 -0.1 -0.5 1.1 -0.5 -1.1 -0.7 -0.7 -0.7 -2.7 -0.7 -2.7 -0.1 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 3 -0.5 3 -0.7 1 0.0 7 -0.7 1 0.0 7 -0.7 8 -0.7 9 -0.7 8 -1.0 5 -0.8 2 -0.3 8 -1.0 -0.7 -0.9 F21 F 2.4 2.4 2.3 0.8 3.4 3.4	FMI 3 F10 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.	0.2 0.2 0.4 0.3 0.4 0.3 0.4 0.4 0.3 0.4 0.4 0.5 -0.5 -0.5 -0.5 -0.8 2.7 3.0 2.2 3.4 2.2 3.4 2.4 2.1 2.2 4.5	0 -0.4 0.5 0.4 -0.7 -0.7 -0.2 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4 1.2 1.3 2.4 2.1 2.2 0.7 1.5 1.5		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]gyrene Benzo[a]pyrene Benzo[b],h]anthracene Chrysene+ Triphenylene Tehrene+ Triphenylene Benzo[b],k]fluoranthene En Phenanthrene Anthracene En Phenanthrene Benzo[b],luoranthene Benzo[b]fluoranthene Benzo[b]reree B		F3 1.4 -0.7 1.5 0.6 1.0 0.6 -1.5 -0.9	VMM F10 0.5 0.0 1.3 0.6 5.3 5.3 1.5 1.0 0.4 -0.6	F30 0.3 -1.3 -0.4 -1.0 -1.6 -2.4 -1.0	0.7 -1.1 -0.3 -0.6 -0.6 0.4 2.2 -0.7	F21 F -0.4 -0.4 -0.3 -0.5 -1.9 -0.5 -1.9 -0.5 -1.1 -0.5 F21 F -1.5 -0.6 -0.8 -0.2 -0.1 -0.8 -0.2 -0.2 0.0 0.0	3 7 12 12 12 12 12 12 12 12 12 12	U 0.4 -1.2 -1.2 -1.0 -1.1 -1.0 -1.1 -0.7 -0.5 -1.0 -2.5 -1.0 -0.5 -1.0 -2.5 -1.0 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7	F30 -0.6 -1.2 -0.7 -0.7 -2.7 -1.0 -0.1 -1.0 -1.0 -1.0 -2.1 -2.1 -2.4 F30 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 5 -0.8 2 -0.3 8 -1.0 5 -0.7 60.7 -0.7 7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 2.6 3.3 2.4 2.6 2.3 0.8 3.4 2.6 2.3 0.8 3.4 4.6 2.2 2.2	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.1 -0.1 -0.1 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.4	F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.4 0.4 0.5 -0.6 -0.5 -0.6 -0.7 -0.7 -0.8 -0.8 -0.7 -0.7 -0.8 -0.4 -0.2 -0.2 -0.4 -0.5 -0.6 -0.7 <tr< td=""><td>0 -0.4 0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4</td><td></td><td>-0.4</td><td></td><td>0.1</td></tr<>	0 -0.4 0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k].h]anthracene Benzo[k].h]anthracene Benzo[k].h]anthracene Chrysene+Triphenylene "Benzo[k]fluoranthene En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[k]fluoranthene		F3 1.4 0.7 1.5 0.6 0.6 1.0 -1.5	VMM F10 0.5 0.0 0.3 1.5 1.5 1.0 0.4	F30 F30 0.3 -1.3 -1.0 -2.5 -1.0 -1.6 -2.4	0.7 -1.1 -0.3 -0.6 -0.6 0.4 2.2	F21 F -0.4 -0.4 -2.3 0.8 -0.5 -1.9 -3.3 -1.0 -2.1 -0.8 -0.1 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.8 -0.4 -2.3 -0.4 -2.3 -0.4 -2.5 -0.4 -2.5 -0.5	3 12 12 12 13 12 12 10 10 10 10 -0.6 -2.7 -2.2 -0.8 -2.3 -1.6 EER 3 -1.1 -0.4 -0.6 -0.4 -0.6 -0.4 -0.	U 0.4 -1.2 -1.0 -1.1 -0.7 -0.5 -1.8 -2.5 -1.0 -2.2 -1.9 C -0.5 0.0 0.9 0.3 1.5 -0.4 -0.7 -0.4 -0.7 -0.4 -0.7 -0.7 -0.5	F30 -0.6 -1.2 -0.7 -2.7 -1.0 -0.1 -3.1 -1.6 -2.2 -2.1 -2.4 F30 0.1 -0.1 -0.1 -0.1 -0.1 -0.5 1.1 -0.5 -1.1 -0.7 -0.1	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 5 -0.8 2 -0.3 5 -1.1 5 -0.3 6 -1.0 5 -0.3 6 -1.0 5 -0.3 6 -1.0 5 -1.1 5 -2.6 3.3 2.4 2.3 0.8 3.4 2.3 0.8 3.4 4.6 4.6	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.1 -0.1 -0.1 -0.1 -0.9 -	0.2 0.2 0.4 0.3 0.4 0.3 0.4 0.4 0.3 0.4 0.4 0.5 -0.5 -0.5 -0.5 -0.8 2.7 3.0 2.2 3.4 2.2 3.4 2.4 2.1 2.2 4.5	0 -0.4 0.5 0.4 -0.7 -0.7 -0.2 -0.9 -0.8 -0.9 -1.5 0 1.6 1.4 1.2 1.3 2.4 2.1 2.2 0.7 1.5 1.5		-0.4		0.1
En Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a], a], a, c, d]pyrene Dibenzo[a, a], anthracene Benzo[b], k]fluoranthene Benzo[b], k]fluoranthene Phenanthrene Phenanthrene Phenanthrene Phenanthrene Phenanthrene Benzo[b]fluoranthene		F3 1.4 -0.7 1.5 0.6 1.0 0.6 -1.5 -0.9	VMM F10 0.5 0.0 1.3 0.6 5.3 5.3 1.5 1.0 0.4 -0.6	F30 0.3 -1.3 -0.4 -1.0 -1.6 -2.4 -1.0	0.7 -1.1 -0.3 -0.6 -0.6 0.4 2.2 -0.7	F21 F -0.4 -0.4 -0.3 -0.5 -1.9 -0.5 -1.9 -0.5 -1.1 -0.5 F21 F -1.5 -0.6 -0.8 -0.2 -0.1 -0.8 -0.2 -0.2 0.0 0.0	3 7 12 12 12 12 12 12 12 12 12 12	U 0.4 -1.2 -1.2 -1.0 -1.1 -1.0 -1.1 -0.7 -0.5 -1.0 -2.5 -1.0 -0.5 -1.0 -2.5 -1.0 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7 -0.5 -0.7	F30 -0.6 -1.2 -0.7 -0.7 -2.7 -1.0 -0.1 -1.0 -1.0 -1.0 -2.1 -2.1 -2.4 F30 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.	4.1 3.4 4.5 2.0 2.5 4.4 2.8 2.2 2.5 2.8 2.2 2.5 2.8 2.2	F10 4.0 3.4 3.8 3.0 0.8 -0.1 1.5 3.9 1.9 0.8 0.8 1.8 0.5 EPA-ie	3.6 2. 3.3 3. 2.1 1. 2.0 1. 0.7 0. 1.0 1. 0.3 0. 0.3 0. 0.7 0. 0.3 0. 0.2 -0. 2.7 1. 0.2 0.	F21 F 30 -0.5 30 -0.7 1 0.0 7 -0.1 8 -0.5 5 -0.8 2 -0.3 8 -1.0 5 -0.7 60.7 -0.7 7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 -0.7 2.6 3.3 2.4 2.6 2.3 0.8 3.4 2.6 2.3 0.8 3.4 4.6 2.2 2.2	FMI 3 F10 -0.2 -0.2 -0.2 -0.2 -0.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -1.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.2 -0.7 -0.9 -0.1 -0.1 -0.1 -0.9 -0.9 -0.9 -0.9 -0.9 -0.9 -0.4	F3 -0.2 0.0 0.4 0.3 0.4 0.4 0.4 0.4 0.4 0.5 -0.6 -0.5 -0.6 -0.7 -0.7 -0.8 -0.7 -0.7 -0.7 -0.8 -0.2 -0.4 -0.2 -0.2 -0.4 -0.5 -0.6 -0.7 <	0 -0.4 0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4		-0.4		

Table 12.- Overall expanded uncertainty.

	1	IVL				LANUV				NER				ABUN				ERLAF		
	F21 F3				F21 F3	3 F10) F30		F21 F	3 F	10 F	30	F21 F3	F1			F21 F3	F1		
Phenanthrene	62.3	58.8	55.1	43.3									125.2	62.6	44.9	3.6	103.7	59.9	15.6	36.4
Anthracene	83.8	57.2	62.9	55.0									125.6	40.9	51.6	12.2	54.2	41.1	31.9	15.2
Fluoranthene	35.9	44.7	41.0	43.5									31.3	28.9	22.9	6.0	26.4	43.7	18.7	23.3
Pyrene Benzo[a]anthracene	49.2	42.0	43.2 45.7	42.1 20.4	58.5	55.3	32.6	25.1					39.1 33.6	24.9 55.5	25.3 22.1	8.7 9.3	18.7 12.3	43.9 33.1	15.8 23.9	16.5 9.3
Chrysene	73.7	83.1	30.1	20.4	58.5	55.3	32.6	25.1					55.3	55.5 77.2	14.4	9.3 15.0	12.3	33.1	23.9	9
Benzo[b]fluoranthene	36.7	48.4	30.8	38.7	26.2	67.7	19.3	15.3					55.5	11.2	14.4	15.0	17.8	44.1	13.4	24.2
Benzo[j]fluoranthene	00.7	40.4	00.0	00.7	20.2	07.17	25.0	32.4									8.6	15.0	16.4	13.5
Benzo[k]fluoranthene	42.7	44.4	38.6	49.5	37.4	18.2	25.6	12.3					44.4	51.2	44.2	29.7	37.6	56.4	32.4	33.5
Benzo[e]pyrene													66.5	49.2	42.5	9.3	53.0	44.9	22.5	12.0
Benzo[a]pyrene	35.3	54.6	30.8	42.1	25.6	24.4	16.6	26.9					28.6	57.4	38.5	10.8	15.9	23.6	35.1	9.8
Perylene													90.2	101.2	71.0	9.3	52.2	32.9	21.4	14.8
Indeno[1,2,3,-c,d]pyrene	35.3	50.9	38.1	47.2	29.9	32.6	19.7	32.0					59.3	52.5	33.7	10.2	23.9	14.4	28.4	9.2
Dibenzo[a,h]anthracene	73.3	83.7	45.3	69.1	91.9	88.9	57.3	29.5					111.7	100.5	33.0	15.8	74.5	121.2	56.2	27.4
Benzo[g,h,i]perylene	42.2	35.3	43.0	44.2									35.5	30.0	20.6	13.0	22.4	21.0	17.5	16.
*Chrysene+Triphenylene					11.0	05.4	17.0	04.0					7.2	15.2	8.9	14.9	42.5	58.9 7.3	31.1	12.3
*Benzo[b.j,k]fluoranthene		EPA-L	T		44.2	35.1	17.6	31.3		EEA			53.6	93.0	31.4	14.8	25.6	7.3 ERLAP#	19.3	16.0
OEU	F04 F(20	F21 F3	AWEL 3 F10	F30		F21 F			200	F21 F3	KAL F1	0 F3	20	F21 F3	ERLAP#		
Phenanthrene	F21 F3	3 F1	U Fa	30	FZ1 F.	3 F10	F30		2541.8	271.7		30	F21 F3	F1	0 F3	30				30 9.7
Anthracene	138.7	201.7	67.7	48.5					3634.1	1439.9	292.2 810.8	90.0					22.7 65.3	38.0 93.1	53.6 88.9	38.9
Fluoranthene	130.7	201.7	67.7	40.5	454.5	191.5	89.3	21.6	725.9	1439.9	165.4	90.0 66.3					15.5	20.3	28.1	15.2
Pyrene	1				553.9	184.9	95.3	26.2	561.4	172.4	165.7	73.5					16.9	26.8	27.9	15.0
Benzo[a]anthracene	87.4	519.0	103.3	23.5			55.6	23.8	184.4	33.6	96.7	67.6			25.7	21.3	25.5	33.1	30.7	6.2
Chrysene	22.1	106.2	36.5	22.7			85.1	41.6	103.2	69.1	125.2	90.6				0				5.
Benzo[b]fluoranthene	72.9	519.6	55.6	21.3				104.3	209.5	239.7	230.5	170.1					8.0	29.7	8.4	15.9
Benzo[j]fluoranthene																	7.9	7.7	15.4	19.1
Benzo[k]fluoranthene	83.6	518.7	71.1	28.8			36.2	29.1	36.1	75.6	110.0	35.9					18.9	13.6	17.1	15.4
Benzo[e]pyrene																	77.7	69.5	31.6	11.4
Benzo[a]pyrene	63.7	367.8	82.5	33.8			59.9	25.4	92.7	29.7	64.2	29.4			30.6	32.6	14.2	20.1	95.6	14.6
Perylene																	16.4	21.1	41.9	9.4
Indeno[1,2,3,-c,d]pyrene	98.1 140.3	387.5 281.0	47.4 74.4	22.5 32.3			49.6	22.4 34.0							40.4	42.2 44.5	14.9 76.6	29.1 89.1	7.1 63.5	11.5 18.7
Dibenzo[a,h]anthracene	67.6	281.0 96.0	26.0	32.3			48.3	22.3	50.6	68.8	80.0	38.0			90.2	44.5	17.7	15.9	63.5 37.7	28.7
Benzo[g,h,i]perylene *Chrysene+Triphenylene	67.6	96.0	26.0	19.7			48.3	22.3	50.6	68.8	80.0	38.0					17.7	10.1	16.1	28.7
*Benzo[b.j,k]fluoranthene					158.5		72.6	11.3					83.5	85.3	33.1	42.1	12.6	18.3	9.8	5.6
OEU		APA-LF	8A		150.5	CHMU	72.0	11.5		ISSe	P		00.0	EMI	55.1	42.1	12.0	10.5	3.0	5.0
	F21 F3			30	E21 E3		F30		F21 F			30	F21 F3	F1	0 F3	30				
Dhononthrono																				
Phenanthrene					187.1	120.2	58.5	57.1	2523.1	1413.8	542.8	145.3	118.5	102.9	97.5	34.9				
Anthracene					187.1 30.4			57.1 32.6	2523.1 11142.0		542.8 2248.5	145.3 659.4	118.5 100.9	102.9 56.8	97.5 56.4	34.9 78.9				
					30.4 45.4	120.2 21.2 57.7	58.5 43.3 61.0	32.6 52.2	11142.0 684.3	1413.8 6191.8 291.3	2248.5 93.9	659.4 48.0	100.9 35.3	56.8 39.8	56.4 54.4	78.9 23.3				
Anthracene Fluoranthene Pyrene					30.4 45.4 56.5	120.2 21.2 57.7 64.1	58.5 43.3 61.0 35.8	32.6 52.2 48.2	11142.0 684.3 750.1	1413.8 6191.8 291.3 202.1	2248.5 93.9 102.8	659.4 48.0 52.0	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene					30.4 45.4 56.5 58.3	120.2 21.2 57.7 64.1 63.8	58.5 43.3 61.0 35.8 41.6	32.6 52.2 48.2 43.9	11142.0 684.3 750.1 300.3	1413.8 6191.8 291.3 202.1 72.7	2248.5 93.9 102.8 53.3	659.4 48.0 52.0 52.2	100.9 35.3	56.8 39.8	56.4 54.4	78.9 23.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene					30.4 45.4 56.5	120.2 21.2 57.7 64.1	58.5 43.3 61.0 35.8	32.6 52.2 48.2	11142.0 684.3 750.1 300.3 201.3	1413.8 6191.8 291.3 202.1 72.7 33.4	2248.5 93.9 102.8 53.3 68.7	659.4 48.0 52.0 52.2 67.1	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene					30.4 45.4 56.5 58.3	120.2 21.2 57.7 64.1 63.8	58.5 43.3 61.0 35.8 41.6	32.6 52.2 48.2 43.9	11142.0 684.3 750.1 300.3 201.3 216.6	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5	2248.5 93.9 102.8 53.3 68.7 45.8	659.4 48.0 52.0 52.2 67.1 54.1	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene					30.4 45.4 56.5 58.3	120.2 21.2 57.7 64.1 63.8	58.5 43.3 61.0 35.8 41.6	32.6 52.2 48.2 43.9	11142.0 684.3 750.1 300.3 201.3 216.6 481.7	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1	2248.5 93.9 102.8 53.3 68.7 45.8 81.8	659.4 48.0 52.0 52.2 67.1 54.1 55.2	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene					30.4 45.4 56.5 58.3	120.2 21.2 57.7 64.1 63.8	58.5 43.3 61.0 35.8 41.6	32.6 52.2 48.2 43.9	11142.0 684.3 750.1 300.3 201.3 216.6	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5	2248.5 93.9 102.8 53.3 68.7 45.8	659.4 48.0 52.0 52.2 67.1 54.1	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]gluoranthene Benzo[k]guyrene					30.4 45.4 56.5 58.3 45.7	120.2 21.2 57.7 64.1 63.8 78.6	58.5 43.3 61.0 35.8 41.6 32.7	32.6 52.2 48.2 43.9 18.2	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9	100.9 35.3 74.1 46.1	56.8 39.8 80.1 65.5	56.4 54.4 96.8 59.9	78.9 23.3 20.3 33.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[e]pyrene Benzo[e]pyrene					30.4 45.4 56.5 58.3	120.2 21.2 57.7 64.1 63.8	58.5 43.3 61.0 35.8 41.6	32.6 52.2 48.2 43.9	11142.0 684.3 750.1 300.3 201.3 216.6 481.7	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1	2248.5 93.9 102.8 53.3 68.7 45.8 81.8	659.4 48.0 52.0 52.2 67.1 54.1 55.2	100.9 35.3 74.1	56.8 39.8 80.1	56.4 54.4 96.8	78.9 23.3 20.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[J]fluoranthene Benzo[J]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Perylene					30.4 45.4 56.5 58.3 45.7 60.5	120.2 21.2 57.7 64.1 63.8 78.6 77.8	58.5 43.3 61.0 35.8 41.6 32.7 72.1	32.6 52.2 48.2 43.9 18.2 62.9	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0	659.4 48.0 52.0 67.1 54.1 55.2 57.9 45.2	100.9 35.3 74.1 46.1	56.8 39.8 80.1 65.5 51.6	56.4 54.4 96.8 59.9 32.2	78.9 23.3 20.3 33.3 29.9				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene					30.4 45.4 56.5 58.3 45.7	120.2 21.2 57.7 64.1 63.8 78.6	58.5 43.3 61.0 35.8 41.6 32.7	32.6 52.2 48.2 43.9 18.2	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9	100.9 35.3 74.1 46.1	56.8 39.8 80.1 65.5	56.4 54.4 96.8 59.9	78.9 23.3 20.3 33.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[J]fluoranthene Benzo[J]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Perylene					30.4 45.4 56.5 58.3 45.7 60.5 75.1	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3	32.6 52.2 48.2 43.9 18.2 62.9 48.3	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7	659.4 48.0 52.0 67.1 54.1 55.2 57.9 45.2 29.7	100.9 35.3 74.1 46.1 45.8 66.9	56.8 39.8 80.1 65.5 51.6 81.8	56.4 54.4 96.8 59.9 32.2 57.0	78.9 23.3 20.3 33.3 29.9 58.6				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[c]fluoranthene Benzo[c]fluoranthene Benzo[c]fluoranthene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[g],h.i]perylene "Chrysene+Tripheneylene					30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1	659.4 48.0 52.0 67.1 54.1 55.2 57.9 45.2 29.7 142.2	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[a],h]perylene "Chrysene+Triphenylene "Benzo[b],k]fluoranthene					30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 67.1 54.1 55.2 57.9 45.2 29.7 142.2	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[c]fluoranthene Benzo[c]fluoranthene Benzo[c]fluoranthene Perylene Indeno[1,2,3,-c,d]pyrene Dibenzo[a,h]anthracene Benzo[g],h.i]perylene "Chrysene+Tripheneylene		VMM			30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES	56.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6	78.9 23.3 20.3 33.3 33.3 58.6 49.7 76.4 30.4 49.7				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Benzo[a],h]anthracene Benzo[b,h]perylene "Chrysene+Triphenylene "Benzo[b,j,k]fluoranthene	F21 F3	3 F1	0 F3		30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 F21 F3	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 3 F10	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 536	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 67.1 54.1 55.2 57.9 45.2 29.7 142.2	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 F21 F3	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES F1	56.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 3G 0 F3	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 30				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Benzo[J]fluoranthene Benzo[J]fluoranthene Benzo[K]fluoranthene Benzo[K]fluoranthene Benzo[k]fluoranthene Benzo[k].uoranthene Parylene Parylene Indeno[1,2,3,-c,d]pyrene Indeno[1,2,3,-c,d]pyrene Benzo[g,h,i]perylene *Chrysene+Triphenylene *Benzo[b,i,k]fluoranthene OEU Phenanthrene	75.9	3 F1 29.0	0 F3 22.5	28.6	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 66.9 66.9 70.2 70.2 70.2	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 3 9.0	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 730 730 730 730 730 730 730	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES	56.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6	78.9 23.3 20.3 33.3 33.3 58.6 49.7 76.4 30.4 49.7 76.4 30.4 49.7 72.0				
Anthracene Fluoranthrene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Benzo[a],h]anthracene Benzo[b,h]perylene "Chrysene+Triphenylene "Benzo[b,J,k]fluoranthene OEU Phenanthrene Anthracene	75.9 67.0	3 F1 29.0 22.4	0 F3 22.5 64.0	28.6 49.0	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F3</u> 58.2 162.8	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 3 9.0 132.8	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 723.0 106.1	32.6 52.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 57.4 51.5 F21 F3 196.9	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES F1 173.7	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 56 0 F3 156.1	78.9 20.3 33.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 76.4 30 72.0 80.7				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[c]pyrene Benzo[c]pyrene Perylene Perylene Dibenzo[a,h]anthracene Benzo[c],h]anthracene Benzo[c],h]nutracene Benzo[c],h]nutracene Benzo[c],b]fluoranthene "Benzo[c],k]fluoranthene OEU Phenanthrene Anthracene Fluoranthene	75.9 67.0 48.3	3 F1 29.0 22.4 42.8	0 F3 22.5 64.0 22.9	28.6 49.0 19.0	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F3</u> 58.2 182.8 14.6	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 0 72.0 106.1 19.0	32.6 52.2 48.2 18.2 62.9 48.3 46.0 60.2 71.5 13.6 123.6 5.4	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 F21 F3 196.9 217.6	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES F1 173.7 175.3	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 50 F3 156.1 186.1	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 72.0 80.7 62.1				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Benzo[a,h]anthracene Benzo[b,h]perylene "Chrysene+Triphenylene "Benzo[b,k]fluoranthene Phenanthrene Anthracene Fluoranthene Pyrene	75.9 67.0 48.3 30.5	3 F1 29.0 22.4 42.8 28.1	0 F3 22.5 64.0 22.9 36.4	28.6 49.0 19.0 27.5	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 F21 F2 162.8 14.6 8.9	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 3 90.0 132.8 13.2 13.2 16.1	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 73 0 73.0 106.1 19.0 24.6	32.6 52.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 F21 F3 196.9 217.6 125.4	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 4EA/ES 77 77 175.3 104.6	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 50 156.1 186.1 112.4	78.9 20.3 33.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 76.4 30.4 49.7 76.4 30.7 6.2 30 72.0 80.7 62.1 53.1				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a, A]anthracene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b],k]fluoranthene "Benzo[b],k]fluoranthene "Benzo[b],k]fluoranthene Fluoranthene Pyrene Benzo[a]anthracene	75.9 67.0 48.3 30.5 36.5	3 F1 29.0 22.4 42.8 28.1 808.8	0 F3 22.5 64.0 22.9 36.4 61.7	28.6 49.0 19.0 27.5 55.3	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F2</u> 58.2 162.8 14.6 8.9 35.7	120.2 21.2 27.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 72.0 106.1 19.0 24.6 17.4	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 51.5 F21 F3 196.9 217.6 125.4 174.7	56.8 39.8 80.1 65.5 51.6 81.8 87.2 62.5 61.6 AEA/ES F1 1773.7 175.3 104.6 70.4	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 0 156.1 112.4 245.0	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 76.4 30.4 49.7 72.0 80.7 72.0 80.7 62.1 53.1 57.4				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Benzo[a],h]anthracene Benzo[b,h]perylene "Chrysene+Triphenylene "Benzo[b,k]fluoranthene "Benzo[b],k]fluoranthene Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene	75.9 67.0 48.3 30.5	3 F1 29.0 22.4 42.8 28.1	0 F3 22.5 64.0 22.9 36.4	28.6 49.0 19.0 27.5	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 F21 F2 162.8 14.6 8.9	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 3 90.0 132.8 13.2 13.2 16.1	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 73 0 73.0 106.1 19.0 24.6	32.6 52.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 F21 F3 196.9 217.6 125.4	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 4EA/ES 77 77 175.3 104.6	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 50 156.1 186.1 112.4	78.9 20.3 33.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 76.4 30.4 49.7 76.4 30.7 6.2 30 72.0 80.7 62.1 53.1				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[b], i]perplene "Chrysene+Triphenpylene "Benzo[b], i, b]fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	75.9 67.0 48.3 30.5 36.5	3 F1 29.0 22.4 42.8 28.1 808.8	0 F3 22.5 64.0 22.9 36.4 61.7	28.6 49.0 19.0 27.5 55.3	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F2</u> 58.2 162.8 14.6 8.9 35.7	120.2 21.2 27.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 72.0 106.1 19.0 24.6 17.4	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 51.5 F21 F3 196.9 217.6 125.4 174.7	56.8 39.8 80.1 65.5 51.6 81.8 87.2 62.5 61.6 AEA/ES F1 1773.7 175.3 104.6 70.4	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 0 156.1 112.4 245.0	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 76.4 30.4 49.7 72.0 80.7 72.0 80.7 62.1 53.1 57.4				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Benzo[a],h]anthracene Benzo[a],h]perylene "Chrysene+Triphenylene "Benzo[b,j,k]fluoranthene Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene	75.9 67.0 48.3 30.5 36.5	3 F1 29.0 22.4 42.8 28.1 808.8	0 F3 22.5 64.0 22.9 36.4 61.7	28.6 49.0 19.0 27.5 55.3	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F2</u> 58.2 162.8 14.6 8.9 35.7	120.2 21.2 27.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 72.0 106.1 19.0 24.6 17.4	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 F21 F3 196.9 217.6 125.4 174.7 158.4	56.8 39.8 80.1 65.5 51.6 81.8 87.2 62.5 61.6 AEA/ES F1 1773.7 175.3 104.6 70.4	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 156.1 186.1 112.4 245.0 601.9	78.9 23.3 20.3 320.3 33.3 29.9 58.6 49.7 76.4 49.7 76.4 49.7 76.4 30.4 49.7 76.4 53.1 53.1 53.1 53.1 57.4 126.0				
Anthracene Fluoranthene Fluoranthene Fluoranthene Benzo[a]anthracene Ghrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a,h]anthracene Chrysene Benzo[b],t]fluoranthene OEU Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	75.9 67.0 48.3 30.5 36.5	3 F1 29.0 22.4 42.8 28.1 808.8	0 F3 22.5 64.0 22.9 36.4 61.7	28.6 49.0 19.0 27.5 55.3	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 <u>F21 F2</u> 58.2 162.8 14.6 8.9 35.7	120.2 21.2 27.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 72.0 106.1 19.0 24.6 17.4	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 51.5 F21 F3 196.9 217.6 125.4 125.4 125.4 158.4 156.2	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 61.6 61.6 70.4 27.1	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 45.6 45.6 156.1 112.4 245.0 601.9 1106.6	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 49.7 76.4 49.7 76.4 30.7 76.2 80.7 62.1 57.4 126.0 103.3				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a]pyrene Benzo[a],h]anthracene Benzo[a],h]anthracene Benzo[b],k]fluoranthene "Chrysene+Triphenylene "Benzo[b],k]fluoranthene Phenanthrene Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene Benzo[k]fluoranthene	75.9 67.0 48.3 30.5 36.5 77.4	3 F1 29.0 22.4 42.8 28.1 808.8 177.3	0 F3 22.5 64.0 22.9 36.4 61.7 48.6	28.6 49.0 19.0 27.5 55.3 30.4	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 F21 F2 162.8 14.6 8.9 35.7 26.9	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 C EERC 3 9.0 132.8 13.2 16.1 29.0 53.2	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 23.0 106.1 106.1 106.1 106.1 106.1 117.4 72.1	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1 42.9	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 51.5 196.9 217.6 125.4 174.7 156.2 81.8	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES F11 1773.7 175.3 104.6 70.4 27.1 85.8	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 40.6 156.1 186.1 112.4 245.0 601.9 1106.6 626.8	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 30.4 49.7 776.4 30.4 49.7 726.4 30.4 100.7 103.3 100.7				
Anthracene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[a]pyrene Benzo[a]pyrene Dibenzo[a, h]anthracene Dibenzo[a, h]anthracene Chryseni, Brightene Tchryseni, Brightene Pyrene Pyrene Benzo[a]anthracene Chrysene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene	75.9 67.0 48.3 30.5 36.5	3 F1 29.0 22.4 42.8 28.1 808.8	0 F3 22.5 64.0 22.9 36.4 61.7	28.6 49.0 19.0 27.5 55.3	30.4 45.4 56.5 58.3 45.7 60.5 76.1 775.1 775.9 66.9 70.2 F21 F2 162.8 14.6 8.9 14.6 8.9 35.7 26.9	120.2 21.2 27.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0	58.5 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 72.0 106.1 19.0 24.6 17.4	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 13.6 124.9 5.4 9.1 19.1	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 51.5 F21 F3 196.9 217.6 125.4 125.4 125.4 158.4 156.2	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 61.6 61.6 70.4 27.1	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 45.6 45.6 45.6 156.1 112.4 245.0 601.9 1106.6	78.9 23.3 20.3 33.3 29.9 58.6 49.7 76.4 49.7 76.4 49.7 76.4 30.7 76.2 80.7 62.1 57.4 126.0 103.3				
Anthracene Fluoranthene Fluoranthene Fluoranthene Pyrene Benzo[a]anthracene Chrysene Benzo[b]fluoranthene Benzo[b]fluoranthene Benzo[b]yrene Benzo[b]yrene Benzo[a]pyrene Floranthene Dibenzo[a,h]anthracene Ghryds,h]anthracene Floranthene Pyrene Peryrene Benzo[a]anthracene Chrysene Benzo[a]anthracene Benzo[b]fluoranthene Benzo[b]pyrene	75.9 67.0 48.3 30.5 36.5 77.4 34.8 42.8	3 F1 29.0 22.4 42.8 28.1 808.8 177.3 48.7 23.8	0 F3 22.5 64.0 22.9 36.4 61.7 48.6 63.6 50.3	28.6 49.0 19.0 27.5 55.3 30.4 26.3 72.1	30.4 45.4 56.5 58.3 45.7 60.5 75.1 72.9 66.9 70.2 F21 F3 162.6 14.6 3.6,7 26.9 3.6,7 26.9 49.2 21.8	120.2 21.2 57.7 64.1 63.8 78.6 77.8 62.3 76.0 71.7 82.5 EERC 39.0 132.8 13.2 16.1 29.0 53.2 13.2 16.1 29.0 53.2	58.6 43.3 61.0 35.8 41.6 32.7 72.1 60.3 45.3 60.1 63.6 106.1 19.0 23.0 F30 23.0 F30 23.0 45.3 60.1 19.0 24.6 17.4 72.1 64.0 34.9	32.6 52.2 48.2 43.9 18.2 62.9 48.3 46.0 60.2 71.5 124.9 5.1 19.1 42.9 53.3 45.2	11142.0 684.3 750.1 300.3 201.3 216.6 481.7 404.1 184.8 206.8 583.7 168.0	1413.8 6191.8 291.3 202.1 72.7 33.4 147.5 215.1 175.5 61.2 54.5 260.5 45.9 EPA-	2248.5 93.9 102.8 53.3 68.7 45.8 81.8 65.0 39.0 29.7 314.1 31.2	659.4 48.0 52.0 52.2 67.1 54.1 55.2 57.9 45.2 29.7 142.2 41.7	100.9 35.3 74.1 46.1 45.8 66.9 110.4 84.7 57.4 51.5 196.9 217.6 125.4 176.7 158.4 156.2 81.8 257.7	56.8 39.8 80.1 65.5 51.6 81.8 118.2 87.2 62.5 61.6 AEA/ES F11 1773.7 175.3 104.6 70.4 27.1 85.8	56.4 54.4 96.8 59.9 32.2 57.0 66.3 68.1 40.6 40.6 156.1 112.4 245.0 601.9 1106.6 626.8 121.5 259.8 850.7	78.9 23.3 20.3 33.3 33.3 58.6 49.7 79.4 30.4 49.7 72.0 80.7 62.1 57.4 125.0 103.3 100.7 38.1.5 54.3 81.5				
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Table 13.– Evaluation of individual results

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Conclusions

- The use of high volume samplers to organize inter-laboratory exercise as a valid method to carry out proficiency tests and evaluate overall performance of PAHs analytical methods is demonstrated.
- GC-MS is the predominant technique used in this exercise to analyses PAHs. 75 % of the participating laboratories used GC-MS as the technique for quantification, while the remaining laboratories used HPLC.
- Non statistical differences were found between results reported by HPLC-FLD and GC-MS techniques.
- Only one laboratory used thermal desorption as an extraction technique. Liquid extraction, by soxhlet, microwave, ultrasonic or ASE, was commonly used. There was no agreement on the use of a particular solvent for extraction. Laboratories used different solvents or combination of solvents to extract PAHs from the filter according to their own expertise.
- The performance of the laboratories improved for those compounds mentioned in the Directive 2004/07/EC and for which CRM can be found on the market.
- A difficulty in separating isomers of benzo-fluoranthene in the reporting of results was noted. i.e. only three laboratories provided values for benzo(j)fluoranthene.
- Separation problems between chrysene and triphenylene were also reflected on their overall expanded uncertainty, where the uncertainty for chrysene quantification was higher than that of sum of the two isomers.
- Although no particular analytical problems were highlighted benzo(e)pyrene and perylene were only reported by four laboratories.
- The influence of the blank levels on the quantification of low concentrations generated overestimations, in particular for the more volatile PAHs.
- Some laboratories systematically provided over- or under-estimations of their results for all compounds and filters.
- Repeatability, reproducibility and robustness of the method improved with increased PAH concentration level on the filter.
- Medians of overall expanded uncertainties ranged from 30 % to 50 % among filters and from 15 % to 70 % among compounds.
- As a median value for the inter-laboratory exercise the overall uncertainty for benzo(a)pyrene was lower than 50 % in all the analysed filters.
- With minor exceptions, median En values were lower than 1, which suggests realistic estimations of analytical uncertainties for the reported values.

Remarks

This report does not comment on individual laboratories results, as its purpose is to extract general conclusions on the methodology and the state of the art of PAH measurements. Each participating laboratory is encouraged to interpret its own result. To this respect, comments on analysis or possible interpretations from participating laboratories about outliers are included in the Annex – Comments from laboratories.

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IARC Monographs on the Evaluation of carcinogenic Risks to Humans: http://monographs.iarc.fr/ENG/Classification/ClassificationsAlphaOrder.pdf

ISO 5725 – Accuracy (trueness and precision) of measurement methods and results. 1994.

ISO/EC Guide 43-1:1997 – Proficiency testing by inter-laboratory comparisons. Part 1: Development and operation of proficiency testing schemes.

ISO 13528:2005. Statistical methods for the use in proficiency testing by inter-laboratory comparison.

ANNEX I

Protocol for PAHs sampling in high volume samplers and intercomparison schedule

Guide to operation

Short description of the uncertainty evaluation reported by the participating laboratories

Histogram of results by compounds

Comments from laboratories

Protocol for PAHs sampling in high volume samplers and intercomparison schedule

Laboratories participating in the PM10 sampling collection

ISCIII Rosalía Fernandez-Patier Spain

CHMI Jiri Novak Checz Republic

Material

- Andersen high volume sampler
- PM10 sampling head
- Quartz filters: Whatman: QM-A Quartz microfiber filter. 20.3x 25.4 cm (8x 10 in). Cat. No. 1851 865
- pre-cleaned tweezers.
- Petri-disks (Ø 50 mm).
- Freezer -16°C.
- Aluminium foil.

Filter conditioning and handling.

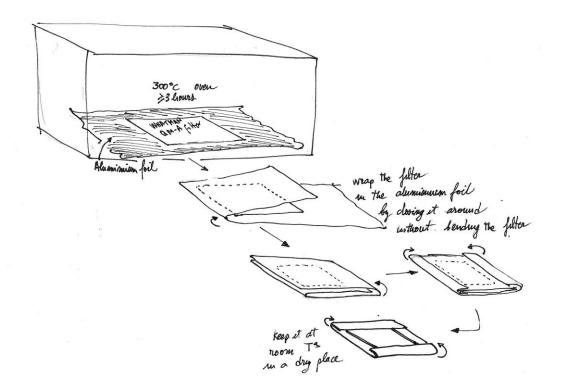
Filters are never to be handled.

Filters are always handled with pre-cleaned tweezers or appropriated gloves and should never be bent.

Tweezers are previously cleaned with hexane (GC quality) and paper tissue and dried in the oven 100

°C before use.

The filters are heat-treated in an oven at 300 °C for a -minimum of 3 hours.



Afterwards the filter is wrapped in aluminium foil by bending the edges of the aluminium foil (and not the filter) around the filter. The packet is left to cool to room temperature and placed in a dry environment before sampling.

A sticker over the aluminium foil should be attached indicating the date in which the filter was cleaned, the temperature used and duration of treatment

The filter is unwrapped only at the start of the sampling time. Care must be taken not to place the tweezers in contact with the sampling head.

After sampling, the filter is removed with the cleaned tweezers from the sampling head and wrapped in the same way that was described previously with the aluminium foil.

It is possible to use the same aluminium foils that were used previously if they have not been damaged and if they have been kept in a clean and dry place and free from sources of contamination.

After wrapping the filter sample, another sticker is added with the sampling information: Date, starting and ending time and sampling location.

The filters are kept in freezers until the sampling campaign is terminated and are then sent to JRC Ispra.

Sampling frequency and location

Sampling should be preferably located in a traffic-oriented or urban background site, in accordance with the availability of additional information such as: meteorological conditions (temperature, relative humidity, and wind velocity), additional measurements as (PM10 level, ozone, and other pollutants).

The sampling will cover two different seasonal conditions, where different concentration levels are expected: summer (between June – August 2009) and winter (between November 09– January 2010).

Sampling laboratories are requested to sample at least 5 filters for each seasonal batch. Laboratories should not weigh the filters; although an indication of the overall sampled volume would be useful

It is up to the sampling laboratory to decide the date for each sampling, which could be done consecutively or spread over the corresponding seasonal period. The following information could be registered for each filter:

Cleaning date :								
Cleaning time:								
Cleaning temperature:								
Starting time and date								
Ending time and date								
Sampling volume (ambient conditions)								
Average atmospheric pressure, KPa								
Average sampling temperature, K								
Average relative humidity, %								
Average inversion layer, m								
Rainfall, mm/h								
Average ozone level ($\mu g/m^3$, at								
standard conditions)*								
PM10 (from parallel measurements)*								
PM2.5 (from parallel measurements)*								
Other pollutants*:								
NOx/CO/BTEX/EC/OC etc								
Description and location of the sampling site:								

* (If available)

Expedition

Filters are wrapt and kept in the freezer until the campaign is concluded. These filters are then placed in a cardboard box without being bent. This box is wrapped and sent by *courier express* to JRC Ispra to the following address:

Pascual Pérez Ballesta	
Via Enrico Fermi 2749 - TP-441	
Joint Research Centre	
21027-Ispra (VA)	
Italia	

A **blank filter** should be included in each batch dispatched. This blank has been cleaned, treated and wrapt in the same way as the sampled filters, with the only difference that it has not been used for sampling. The filter will be kept in the freezer from the moment that the first sampled filter is introduced until the seasonal sampling batch is completed.

Filters from the **summer period** are expected to be at the JRC Ispra in **September 2009**. Whilst filters from the **winter period** should be sent at the **beginning of February 2010** at the latest.

Distribution of material to participating laboratories

After receiving the second batch of filters. ERLAP will perform the subdivision of the filters for distribution amongst participants. ERLAP will estimate the homogeneity of the different filters and will select the best samples from each place and season to be subdivided and distributed amongst participants.

Each participant will consequently receive two sections of filters from each sampling location, corresponding to the summer and winter sampling batch.

It is expected that the filters be distributed amongst the participating laboratories **by April 2010.** The participating laboratories will have **two months** to carry out the corresponding *analysis and report* the results to ERLAP according to the protocol, which will be provided with the filters.

Guide to operation

This envelope (Fig. a) contains 6 PM10 filters pieces with the following characteristics:

- a) two blanks filters from the sampling campaigns in Spain and the Czech Republic.
- b) four loaded filters corresponding to the winter and summer campaigns in the afore-mentioned cities.

The filters have been carefully packed in such a way that they can be easily kept in the freezer until analysis (Fig. b). Each filter has been wrapped independently for easier management and protection (Fig. c).

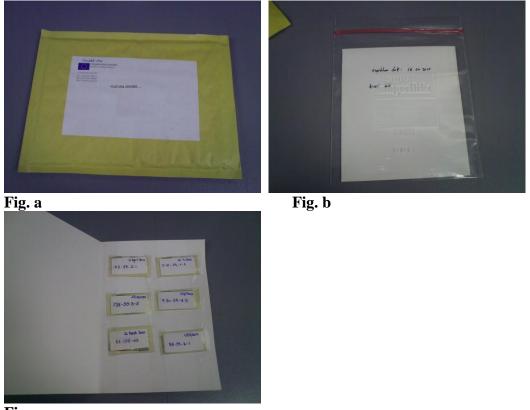


Fig. c

Approximately, the loading of the filters corresponds to the volume sampled by a typical LVS, i.e. 50 m^3 , the expected BaP concentration for the loaded filters would range from 0.04 to 10 ng/m^3 .

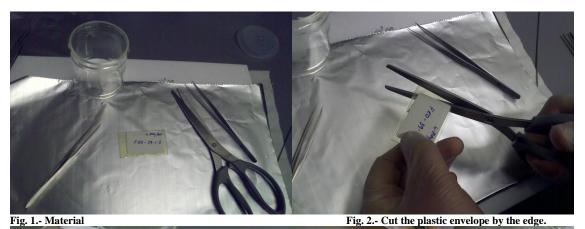
Procedure

Record and write the arrival date of the package at your laboratory. Keep the filters in the freezer until analysis.

Each filter has been assigned a particular code, written on the individual container: The first letter identifies loaded filters (F) or blanks (B).

To unwrap the filter the following material is needed: gloves, scissors and appropriate tweezers (Fig.1).

To unwrap the filters proceed carefully as described in Figures 2 to 5.



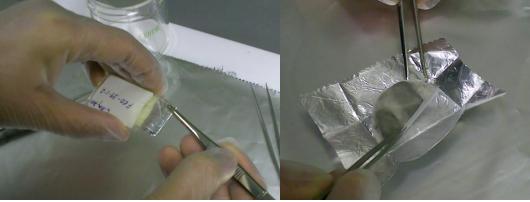


Fig. 3.- Take out the aluminium envelope from inside



Fig. 4.- Unwrap the aluminium foil to get the filter

Fig. 5.- Unfold the filter and introduce it into your container for extraction

Note that the comparison exercise will be based on the amount of compound (ng) quantified on the filter. Therefore, assure that the whole filter is extracted and analysed.

Reporting of results

The following information will be requested from the participants (An excel file will be provided to each participant for final reporting):

- Full description of the analytical methodology
- Masses of the quantified PAH compounds on the filter (according to the list below)
- Minimum number of replicate injections for each sample: 3
- Associated expanded uncertainties for each concentration value reported.
- Description and calculations of the measurement uncertainty.

List of compounds to be quantified on the filter

Single compound	Compounds				
1	Phenanthrene				
2	Anthracene Fluoranthene				
3					
4	Pyrene				
5	Benzo(a)anthracene				
6	Chrysene				
7	Benzo(b)fluoranthene				
8	Benzo(j)fluoranthene				
9	Benzo(k)fluoranthene				
10	Benzo(e)pyrene				
11	Benzo(a)pyrene				
12	Perylene				
13	Indeno[1,2,3-c,d)pyrene				
14	Dibenzo(a,h)anthracene				
15	Benzo(g,h,i)perylene				
Combination of isomers	Compounds				
А	*Chrysene + triphenylene				
C	*Benzo(b.j,k)fluoranthene				

In bolds priority compounds for the interlaboratory comparison

The deadline for submission of results is **August 30th**, **2010**, by forwarding the afore-mentioned documents to the following e-mail address: <u>pascual.ballesta@jrc.ec.europa.eu</u>.

Ispra, 7 May 2010

Short description of the uncertainty evaluation reported by the participating laboratories

IVL

Description of the methodology- not provided

Uncertainty estimation: They provided an overall estimation of 30 % as expanded uncertainty for all averaged measurement values.

EPA-LT

Description of the methodology- 2 x reproducibility standard deviation was chosen for the determination of measurement uncertainty. The statistical data were taken from method validation studies.

Uncertainty estimation: Expanded uncertainty was defined as a percentage of the reported concentration, which ranged from 17 to 25 % depending on the compound.

APA-LRA

Description of the methodology- not provided *Uncertainty estimation*: not provided

VMM

Description of the methodology- The calculation of the combined uncertainty is based on the results of spiked duplo field samples over several years. This procedure is used in general in our laboratory. The used formula is as follows : U = b + 2 CV, where b is bias (measured with certified reference material, and CV is the coefficient of variation. The results are given in the table (at the left) with the uncertainties in %. The table above gives the (+/-) values in pg, calculated from the average concentrations.

Uncertainty estimation: Expanded uncertainty was defined as a percentage of the reported concentration, which ranged from 14 to 21 % depending on the compound

LANUV

Description of the methodology- GUM Workbench Pro software was used (Version 2.3.2 beta, Metrodata GmbH).

Uncertainty estimation: Expanded uncertainties were different from compound to compounds ranging from 10 to 24 %.

AWEL

Description of the methodology- For each series of measurement there is a qc-sample. The results of the qc-sample is reported on a qc-chart. The deviation of this sample is ca. 10% for each PAH. The uncertainty is the deviation of the qc-sample multiplied with factor 2. This addicts a uncertainty of 20% each PAH.

Combined standard uncertainty for homogeneous samples:

 $u_{rel} = \sqrt{\sum {u_{i,rel}}^2}$

 $u_{rel} = \sim 10\%$ each PAH

Expanded uncertainty for each PAH:

Urel = k . u_{rel} (k = 2, probability 95%)

Expanded uncertainty : 20%

Uncertainty estimation: Expanded uncertainties were reported as 100 % of the analysed value for all compounds.

Uncertainty estimation: Expanded uncertainties were reported as 20 % of the analysed value for all compounds

СНМИ

Description of the methodology- Software Effi Validation 3.0. Relative repeatability Measurements. They are weighing averages values.

Uncertainty estimation: Expanded uncertainties were different according to the analysed compound ranging from 9.7 to 37.3 %.

EERC

Description of the methodology- For the calculation of measurement uncertainty SRM 2585 (Organic Contaminants in House Dust) was analysed repeatedly. Uncertainty was calculated according to the Nord test method. Laboratory measurements repeatability standard deviation, measurements bias and standard uncertainty of certified concentration values were used to calculate the combined standard uncertainty. Values in the table above are presented as expanded combined uncertainty. Some values are quite high due to the high bias value. However, the matrix and the PAH compounds' concentration ranges in SRM 2585 are to some extent different as compared with analysed filters and so the use of these values with the determined PAH concentrations in filters may be questionable..

Uncertainty estimation: Expanded uncertainty ranged from approximately 5 to 100 % depending on the compound and concentration level.

NERI

Description of the methodology- not provided *Uncertainty estimation*: not provided

EEA

Description of the methodology- The expanded uncertainty for the individual PAH compounds was calculated based on the following uncertainties: 1. uncertainty of the sub-sampling (weighting of SRM 1944 (U of balance; U of unhomogeneity)); 2. uncertainty of the Internal standard addition (U of IS concentration, U of the volume added); 3. uncertainty of the recovery (extraction, clean-up, concentration); 4. uncertainty of repeatability of the measurements; 5. Uncertainty of the GC/MS measurements (U of calibration standards, U of repeated measurements).

Uncertainty estimation: Expanded uncertainties ranged from approximately 7 to 34 % of the reported concentration, depending on the compound.

ISSeP

Description of the methodology Our extraction Qcs(1000 ppb) are reported on a Shewhart chart and the given uncertainty equals 2*Standard Deviation. So this uncertainty takes into account also the extraction and reconcentration phases. In routine we are analysing samples with larger sampling volumes and so larger concentrations. The SD is given in % and so to get uncertainty we have this formula: uncertainty(ng)=(2*SD(%)*mean of replicates(ng))/100

Uncertainty estimation: Expanded uncertainties ranged from approximately 16 to 30 % of the reported concentration, depending on the compound.

EPA-ei

Description of the methodology- not provided *Uncertainty estimation*: not provided

ABUM

Description of the methodology- calculated with the following software: SQS 2000 - Software for statistical Quality control of analytical data

Uncertainty estimation: Reported expanded uncertainties ranged from approximately 2 to 60 % of the reported concentration, depending on the compound and concentration level.

KAL

Description of the methodology- Measurement uncertainty was assessed only for benzo(a)anthracene, benzo(a)pyrene, benzo(b,j,k)fluoranthene, indeno(1,2,3-cd)pyrene and dibenzo(ah)anthracene. For the assessment of measurement uncertainty, the data from the method validation were used. Two factors were taken into account, i.e., the precision of the method (repeatability and reproducibility) and the bias of the method. For repeatability studies, 7-8 independent replicates of real filter samples were measured in one day, by one analyst. For reproducibility studies, 11 independent replicates of real filter samples were measured in two months period, by two analysts. Repeatability and reproducibility studies were performed for three concentration ranges, i.e. at the lower end of the calibration curve (around 10 pg/uL - at the limit of quantification), in the middle of the calibration curve (around 50 pg/uL) and at the upper end of the calibration curve (around 100 pg/uL). Relative standard deviations were calculated for each concentration range. Furthermore, pooled relative standard deviations were calculated for the whole concentration range (10-100 pg/uL), thus representing standard uncertainties of repeatability and reproducibility. To assess the bias of the method, a Certified Reference Material was used. Trueness of the method was performed only for one concentration range, around 50 pg/uL (the middle of the calibration curve), by measuring 8 independent replicates in one day (for each replicate around 50 mg of CRM was weighed). Standard uncertainty of bias was calculated by taking into account standard deviation of the measured values, average of the measured values, standard uncertainty of the certified value, the certified value and recovery. In the next step, combined standard uncertainty was obtained by calculating the square root of the sum-of-the-squares of individual standard uncertainties of repeatability, reproducibility and bias. In the final step, expanded uncertainty was calculated by multiplying combined standard uncertainty with a coverage factor, i.e. k=2 (for a 95% level of confidence).

Uncertainty estimation: Reported expanded uncertainties ranged from approximately 20 to 40 % of the reported concentration, depending on the compound and concentration level.

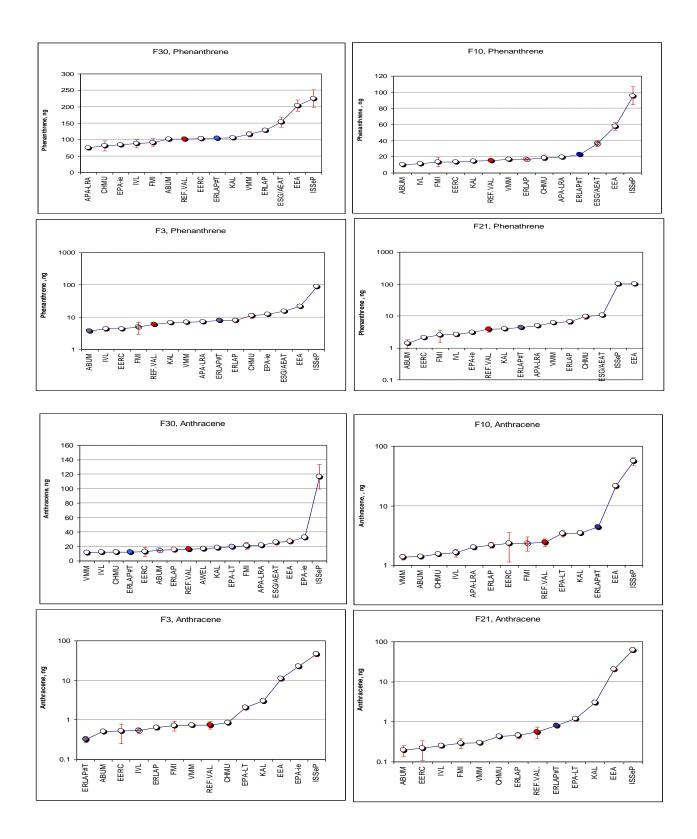
FMI

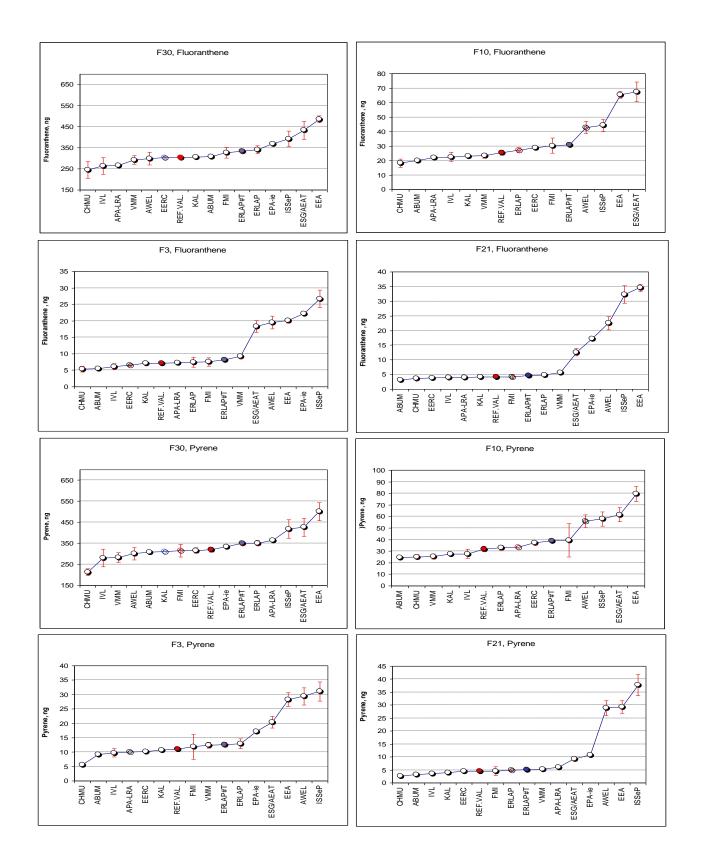
Description of the methodology- Uncertainties are calculated according to prEN15549 for B(a)P concentrations corresponding to the limit value (1 ngm-3) and low concentrations (0.1 ngm-3). Uncertainty parameters are extraction efficiency, compound mass in extracted sample, B(a)P response factor, IS concentration, response precision and mass of B(a)P in field blank. See sheet uncertainty 2. *Uncertainty estimation:* reported expanded uncertainties from 11 to 50 % depending on concentration level and compound.

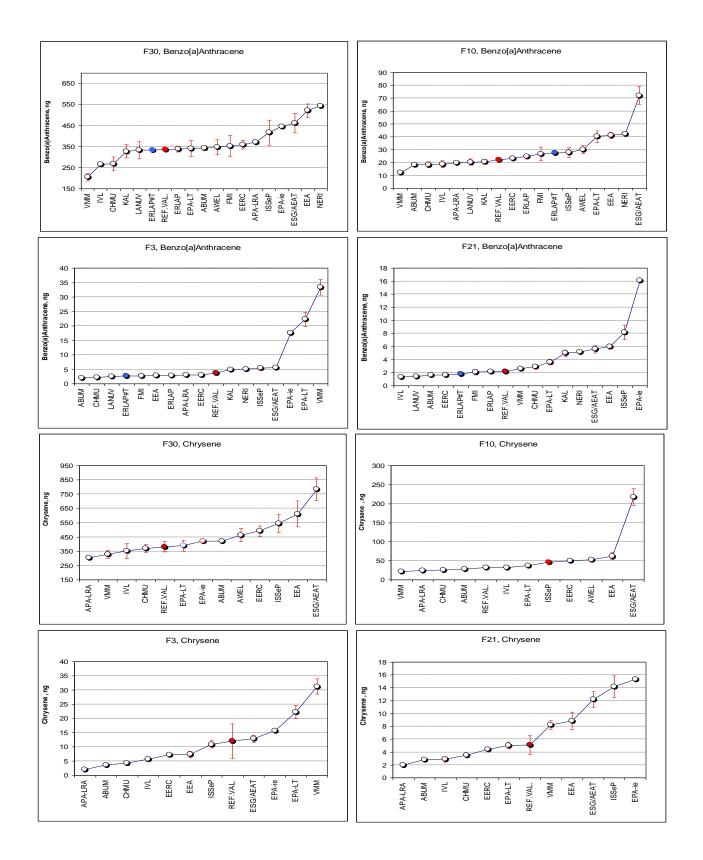
AEAT

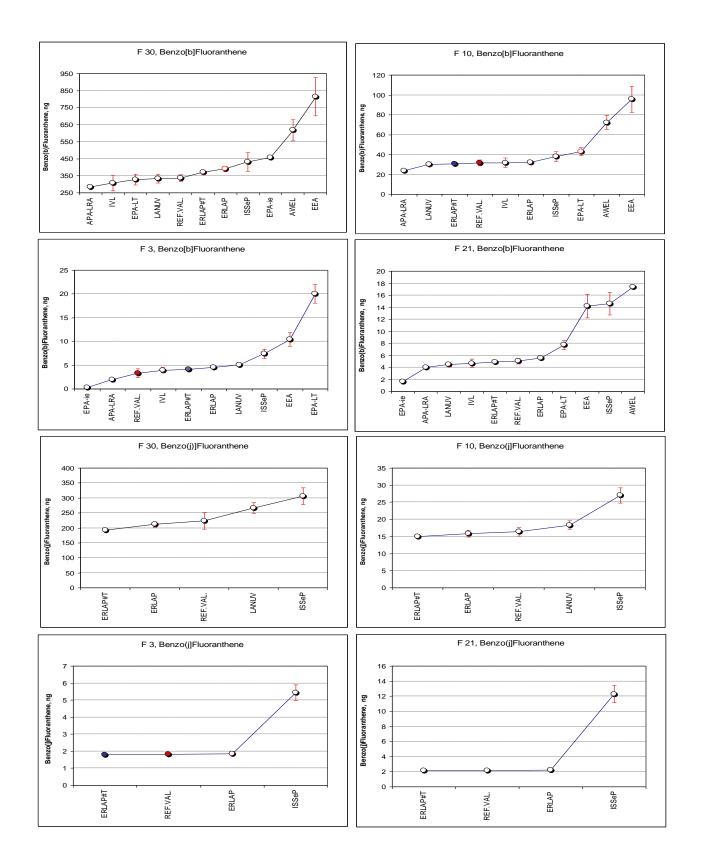
Description of the methodology- not provided *Uncertainty estimation*: Expanded uncertainties were 20 % of the reported concentration.

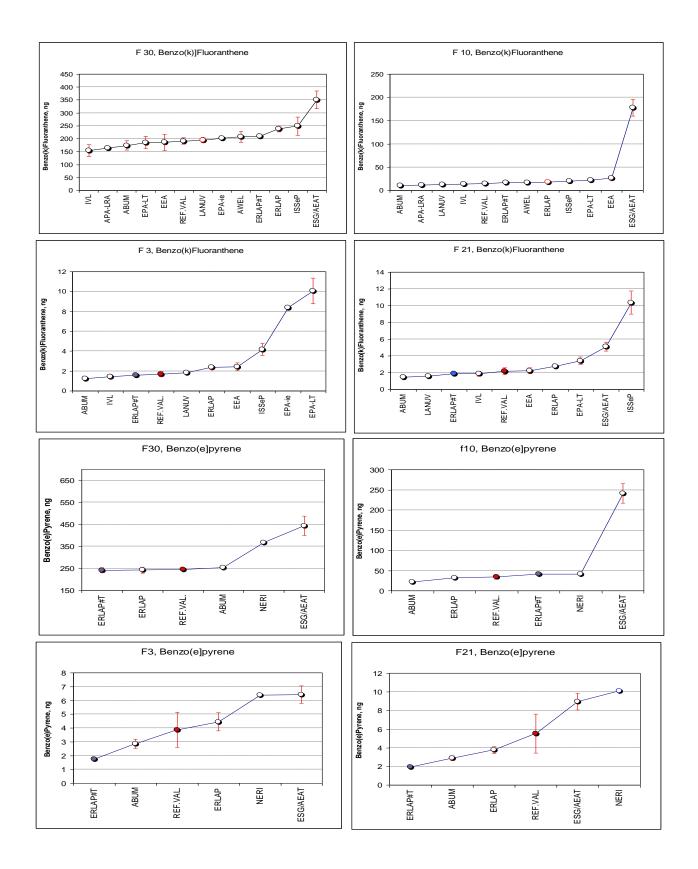
Histogram of results by compounds

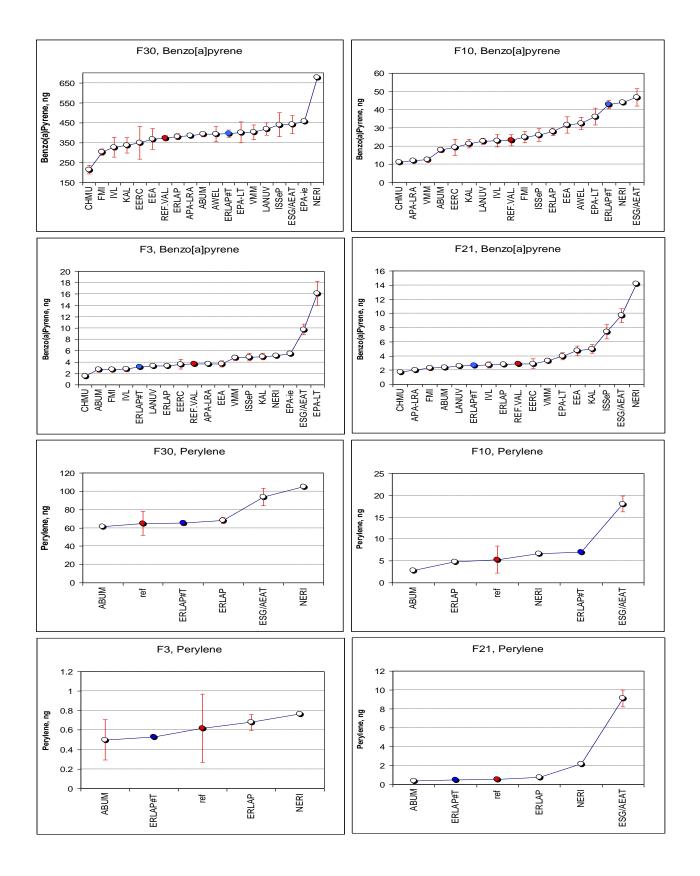


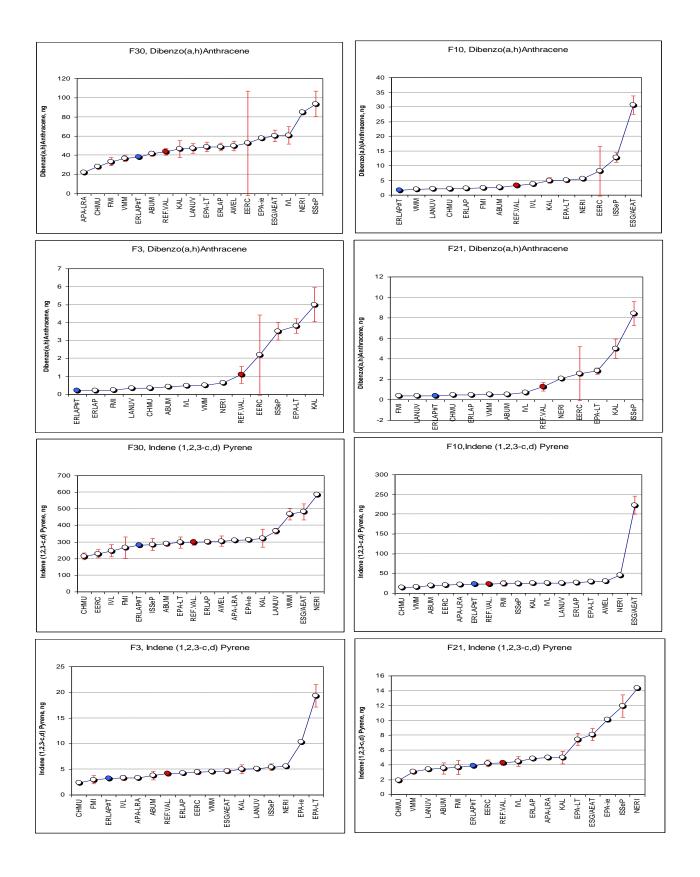


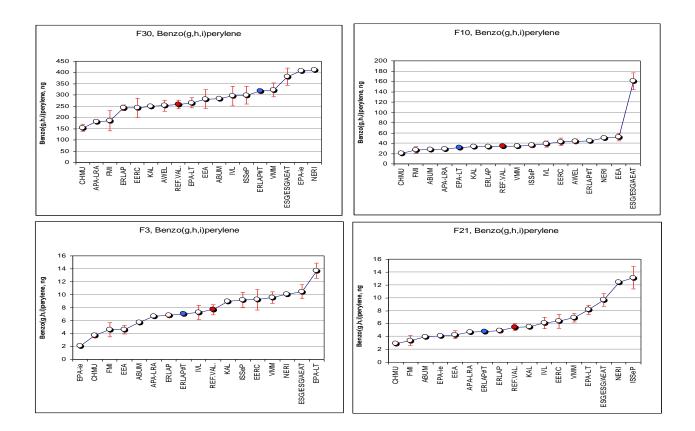












Comments from laboratories

ERLAP:

Chrysene and Triphenylene were reported together. Dibenzo-ah-Anthracene and Indene-1,2,3-c,d-Pyrene were estimated by the deconvolution of their corresponding overlapped ions 278 and 276.

FM

Average results from 2 injections

LANUV:

Sample F30-39-2-5: The peak of 6-Methylchrysene could not be seperated completely from two peaks eluting shortly before and after the substance, resulting in a too high peak area after integration. We know this phenomenon from other samples with high amounts of PAH. Therefore external calibration was used for quantification.

EEA:

Benzo[j]fluoranthene, Benzo[e]pyrene, Perylene, Benzo[b.j,k]fluoranthene, and Chrysene+Triphenylene: Not present in the calibration mix Indeno[1,2,3,-c,d]pyrene, Dibenzo[a,h]anthracene: Difficulties in separation

EERC:

Benzo[a]anthracene: B(a)a and Chry partly overlapping; Chrysene: B(a)a and Chry partly overlapping; Benzo[b]fluoranthene Overlapping peaks; Benzo[j]fluoranthene: Compound not calibrated; Benzo[k]fluoranthene: Overlapping peaks; Benzo[e]pyrene: Compound not calibrated; Benzo[a]pyrene: Partly overlapping with unidentified peak; Perylene: Compound not calibrated; Dibenzo[a,h]anthracene: Partly overlapping with unidentified peak.

ISSeP:

ISSeP sent new rectified values on 30/11/2011. These were corrected from laboratory blanks. They suspected a possible contamination from low molecular PAHs. The new results are listed below.

Rectifficatif blancs.xls

#	Date of analγsis>>>	8/19/2010	8/19/2010	8/19/2010	Date of analysis>>>		8/19/2010	8/19/2010	8/19/2010	e of analγsis>>>	
#	Time of analysis>>>	14h46	15h36	16h25	Time of analysis>>>		14h22	15h11	16h01	e of analysis>>>	Moyenne
	Compound	B3-39-3-2	B3-39-3-2	B3-39-3-2	B3-39-3-2		B2-39-1-2	B2-39-1-2	B2-39-1-2	B2-39-1-2	B3 - B2
		ng	ng	ng	ng		ng	ng	ng	ng	ng
	Phenanthrene	95.03	98.73	92.30	95.35		98.81	94.77	98.37	97.32	96.92
	Anthracene	32.16	27.69	26.65	28.83		30.28	25.34	27.20	27.61	27.85
	Fluoranthene	14.91	15.39	14.62	14.97		17.02	13.33	13.45	14.60	14.67
	Pyrene	19.56	20.07	19.71	19.78		22.36	18.04	18.38	19.59	19.63
5	Benzo[a]anthracene	2.65	2.04	1.55	2.08		5.10	2.09	1.52	2.90	2.74
6	Chrysene	6.93	6.72	5.88	6.51		9.80	6.77	5.81	7.46	7.27
7	Benzo[b]fluoranthene	2.89	2.12	2.57	2.53		5.39	2.28	1.72	3.13	3.01
8	Benzo[j]fluoranthene	2.88	2.03	2.04	2.32		5.44	2.92	2.22	3.53	3.28
9	Benzo[k]fluoranthene	2.62	1.67	1.70	2.00		5.79	2.02	1.27	3.03	2.82
	Benzo[e]pyrene										
	Benzo[a]pyrene	1.99	1.47	1.10	1.52		4.24	1.66	1.39	2.43	2.25
	Perylene	1.55	1.47	1.10	1.52		4.24	1.00	1.35	2.43	2.20
		0.00			0.45				4.00	0.17	
	Indeno[1,2,3,-c,d]pyrene	2.90	1.81	1.74	2.15		6.01	2.41	1.98	3.47	3.20
	Dibenzo[a,h]antracene	0.85	0.86	0.56	0.76		1.72	0.79	0.77	1.09	1.03
_	Benzo[g,h,i]perylene	1.74	0.85	1.02	1.20		5.28	1.45	1.10	2.61	2.33
A	*Chrysene+Triphenylene				#DIV/0!					#DIV/0!	
С	*Benzo[b.j,k]fluoranthene				#DI∨/0I					#DI∨/0!	
	Other compounds										
#	Date of analysis>>>	8/19/2010	8/19/2010	8/19/2010	Date of analysis>>>		8/19/2010	8/20/2010	8/20/2010	of analysis>>>	
#	Time of analysis>>>	21h47	22h12	22h36	Time of analysis>>>	Déduction Blanc	23h50	0h15	0h40	of analysis>>>	Déduction Blanc
	Compound	F10-39-2-2	F10-39-2-2	F10-39-2-2	F10-39-2-2	F10-39-2-2	F3-39-1-2	F3-39-1-2	F3-39-1-2	F3-39-1-2	F3-39-1-2
	Compound	ng	ng	ng		ng	ng	ng	ng	ng	ng
1	Phenanthrene	96.24	97.65	93.17	95.69	-1.24	94.51	88.97	87.94	90.47	-6.45
	Anthracene										
	Fluoranthene	58.84	54.62	54.88	56.11	28.26	47.08	47.29	44.75	46.37	18.52
		45.42	42.98	44.39	44.26	29.59	28.45	26.09	25.66	26.73	12.06
	Pyrene	59.87	57.68	56.22	57.92	38.29	32.24	30.62	30.48	31.11	11.48
	Benzo[a]anthracene	29.99	26.77	26.71	27.82	25.08	7.19	4.94	4.13	5.42	2.68
6	Chrysene	47.68	45.40	45.37	46.15	38.88	12.21	10.72	9.69	10.87	3.60
7	Benzo[b]fluoranthene	39.67	36.90	37.27	37.95	34.94	8.60	6.92	6.69	7.40	4.39
8	Benzo[j]fluoranthene	28.97	26.64	25.47	27.03	23.74	6.81	4.91	4.57	5.43	2.15
9	Benzo[k]fluoranthene	21.75	19.65	19.51	20.30	17.48	5.66	3.96	2.93	4.18	1.36
	Benzo[e]pyrene	21.10			20.00		0.00	0.00	2.00		
	Benzo[a]pyrene	27.50	22.40	07.74	26.16	23.91	6.68	4.09	3.93	4.90	2.65
	Pervlene	27.58	23.16	27.74	20.10	23.91	0.00	4.09	3.93	4.90	2.65
	,										
	Indeno[1,2,3,-c,d]pyrene	27.03	23.95	24.17	25.05	21.85	7.24	5.27	3.63	5.38	2.18
	Dibenzo[a,h]antracene	17.07	11.10	10.08	12.75	11.72	5.57	2.66	2.31	3.51	2.49
	Benzo[g,h,i]perylene	38.25	34.71	34.80	35.92	33.59	10.97	9.03	7.57	9.19	6.86
A	*Chrysene+Triphenylene				#DIV/0!					#DI∨/0!	
С	*Benzo[b.j,k]fluoranthene				#DIV/0!					#DIV/0!	
	Other compounds										
		0//000/0	0400015	0//00017	Data da anti-		0//0/2012	0400045	0//0/2017		
#	Date of analysis>>>	8/19/2010	8/19/2010	8/19/2010	Date of analysis>>>	Déduction Blanc	8/19/2010	8/19/2010		of analysis>>>	Déduction Di
#	Time of analysis>>>	17h40 F30-39-3-4	18h05 F30-39-3-4	18h29 F30-39-3-4	Time of analysis>>> F30-39-3-4	F30-39-3-4	19h43 F21-39-4-1	20h08 F21-39-4-1	20h33 F21-39-4-1	of analysis>>> F21-39-4-1	Déduction Blanc F21-39-4-1
	Compound	r50-55-5-4 ng	ng	r30-35-3-4 ng	ng	ng	ng	ng	ng	ng	ng
1	Phenanthrene	230.93	223.01	220.92	224.95	128.03	102.91	105.86	92.65	100.47	3.55
	Anthracene										
		120.19	115.31	114.91	116.80	88.95	64.30	59.46	63.22	62.33	34.47
	Fluoranthene	392.16	394.60	391.75	392.84	378.16	34.04	31.72	31.17	32.31	17.64
	Pyrene	420.02	421.89	413.00	418.30	398.67	39.76	36.78	36.67	37.74	18.11
	Benzo[a]anthracene	411.79	421.89	417.58	417.09	414.35	10.26	7.65	6.64	8.18	5.44
	Chrysene	561.95	559.61	516.98	546.18	538.91	16.36	13.77	12.45	14.19	6.92
7	Benzo[b]fluoranthene	444.35	427.36	420.91	430.87	427.86	16.67	13.88	13.31	14.62	11.61
	Benzo[j]fluoranthene	307.50	308.19	304.47	306.72	303.44	14.94	10.88	11.08	12.30	9.02
	Benzo[k]fluoranthene	236.07	255.64	255.32	249.01	246.19	12.53	9.58	9.00	10.37	7.55
10	Benzo[e]pyrene					0.00					
11	Benzo[a]pyrene	444.63	438.56	434.80	439.33	437.08	9.96	6.45	5.81	7.41	5.16
	Perylene					0.00					
	Indeno[1,2,3,-c,d]pyrene	289.53	282.28	283.57	285.13	281.92	13.92	10.68	11.17	11.92	8.72
	Dibenzo[a,h]antracene	98.99	90.05	91.64	93.56	92.53	11.13	7.35	6.80	8.43	7.40
14			299.66	296.69	298.78	296.45	14.89	13.04	11.47	13.13	10.80
	Benzol g h i lperviene						14.00	10.04	1.1.47	0.10	10.00
15	Benzo[g,h,i]perylene *Chrysene+Triphenylene	299.99	200.00	200.00							
15 A	*Chrysene+Triphenylene	299.99	200.00	200.00	#DIV/0!					#DIV/0!	
15 A		299.99	200.00	200.05							

European Commission

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Abstract

This report presents the results of the first inter-laboratory comparison for PAHs analysed on quartz filters carried out by the JRC between April and December 2010. Seventeen national reference laboratories participated in this exercise.

Four different filters representing winter and summer periods in two different locations (Madrid and Prague) and two blanks were tested during the exercise. 15 PAHs were considered for analysis from phenanthrene to benzo(g,h,i)perylene, including benzo(a)pyrene. In general, the results of the exercise showed median overall uncertainties ranging from 10 to 90 %, depending on the compound and the analysed concentration. Which in the case of benzo(a)pyrene varied between 30 and 50. The exercise demonstrates the validity of the current methodology for organising PAHs inter-laboratory comparison exercises on PM10 filters. Laboratories exhibited better performance in the analysis of those compounds where reference material was found on the market. The need for implementing a consistent traceability system for measurements is deduced from the systematic biases associated with laboratory behaviour.

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