CONCAWE effluent speciation project

Prepared for the CONCAWE Water, Soil and Waste Management Group by:

P. Leonards (Consultant)
M. Comber (Consultant)
S. Forbes (Shell)

G. Whale (Chair)
K. den Haan (Technical Coordinator)

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ABSTRACT

In preparation for the implementation of the EU REACH regulation, a project was undertaken to transfer the high-resolution analytical method for determining hydrocarbon blocks in petroleum products by comprehensive two-dimensional gas chromatography (GCxGC) to a laboratory external to the petroleum industry (Institute for Environmental Studies (IVM) of the VU University of Amsterdam). The method was validated and used for the analysis of petroleum hydrocarbons extracted from refinery effluents.

The report describes the technology transfer and the approaches used to demonstrate the successful transfer and application of the GCxGC methodology from analysing petroleum products to the quantitative determination of hydrocarbon blocks in refinery effluents.

The report describes all the methods used for all the determinations on the effluent samples along with an overview of the results obtained which are presented in summary tables and graphs. These data have significantly improved CONCAWE's knowledge of what refineries emit in their effluents.

A total of 111 Effluent Discharge Samples from 105 CONCAWE refineries in Europe were obtained in the period June 2008 to March 2009. These effluents were analysed for metals, standard effluent parameters (including COD, BOD), oil in water, BTEX and volatile organic compounds. The hydrocarbon speciation determinations and other hydrocarbon analyses are also reported. The individual refinery analytical results are included into this report, coded as per the CONCAWE system. These data will be, individually, communicated to companies and refineries.

The report demonstrates that it is feasible to conduct a research programme to investigate the fate and effects of hydrocarbon blocks present in discharged refinery effluents.

KEYWORDS

Hydrocarbon blocks, refinery effluents, two-dimensional gas chromatography, REACH, oil in water, Organic Refinery Effluent Components, metals

INTERNET

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SUMMARY

In preparation for the implementation of the EU REACH regulation, a project was undertaken to transfer the high-resolution analytical method for determining hydrocarbon blocks in petroleum products by comprehensive two-dimensional gas chromatography (GCxGC) to a laboratory external to the petroleum industry (Institute for Environmental Studies (IVM) of the VU University of Amsterdam). The method was validated and used for the analysis of petroleum hydrocarbons extracted from refinery effluents.

The next stage of the project was to obtain effluent samples from the CONCAWE refineries in Europe, to determine standard effluent parameters as well as the hydrocarbon blocks. This process began in June 2008 and was completed at the end of March 2009, by which time 111 samples of refinery effluent discharges had been received from 105 refineries.

The analytical determination of metals, standard effluent parameters (including COD, BOD), oil in water, BTEX and volatile organic compounds were conducted at the Laboratory of Omegam (Amsterdam). The hydrocarbon blocks, determined by the aforementioned high resolution GCxGC analytical method, and other hydrocarbon analyses were performed at Institute for Environmental Studies (IVM). Both are accredited laboratories.

The report describes the technology transfer and the approaches used to demonstrate the successful transfer and application of the GCxGC methodology from analysing petroleum products to the quantitative determination of hydrocarbon blocks in refinery effluents. There were some difficulties experienced in this process, which leads to the observation of the type of further work that would be required to further refine the GCXGC method for determining hydrocarbon (HC) blocks in effluents. These are:

- Quantification of the HC blocks of poly-naphthenics was partly hampered by identification of the peaks in the poly-naphthenic GCxGC region, which resulted in semi-quantitative results. Identification of these peaks would be useful to further improve the quantification of these compounds.
- Limited analytical information on the separation of poly-naphthenics (e.g. steranes, triterpanes, and triaromatic steranes) is available [9], and the available commercial standards are expensive.

This report also describes the methods used for all the other analyses performed on the effluent samples along with an overview of the results obtained which are presented in summary tables and graphs. These data have significantly improved CONCAWE's knowledge of what refineries emit in their effluents. However, more interpretation of the obtained data will be conducted with respect to REACH and other regulatory developments (e.g. Water Framework Directive, IPPC Directive). This is outside the scope of this report.

All individual refinery analytical results are included into this report, coded as per the CONCAWE system. These data also will be communicated to companies and refineries, individually.

The report demonstrates that it will be feasible to investigate the fate and effects of hydrocarbon blocks in refinery effluent discharges in a future research programme.

1. INTRODUCTION

In an earlier project [1,2] a study sponsored by CONCAWE, investigated the use of biodegradation tests within the context of Whole Effluent Assessments (WEA) and as part of an OSPAR process. WEA include an assessment of persistence, toxicity and the potential for bioaccumulation. This has the advantage that the effluent can be assessed as a whole, and therefore, full chemical characterisation is not required. Further, as OSPAR developed their ideas, it was also recognised that WEA would increasingly be used as a tool within IPPC and potentially, in support of the Water Framework Directive (WFD). The project reported by Leonards and Postma [1] focused on the development of two biodegradation approaches (persistency) of effluents in combination with toxicity and bioaccumulation for the WEA. The objective of that study was to develop an approach, relevant for the refining industry that assessed the biodegradation of effluents and the impact of this on the toxicity and potential for bioaccumulation of the constituents.

The programme consisted of obtaining a number of effluents (fresh water and marine) selected by CONCAWE, from refineries throughout the EU. The toxicity (T), bioaccumulation (B) and chemical parameters were determined in the selected effluents. Following this, a sub-set of three effluent samples were selected for a degradation study using two different degradation tests (Ready style (DOC die-away) and Zahn-Wellens style). After degradation the toxicity and bioaccumulation of the effluents were determined to study the persistence of the T and B constituents. For the degradation tests three effluents with differing characteristics with respect to the media and Chemical Oxygen Demand (COD) were chosen. One low COD level freshwater, one high COD level freshwater and one marine effluent were tested. Both acute and chronic toxicity tests were undertaken using freshwater and marine species (see also Comber et al [3]). The potential for bioaccumulation of the constituents in the effluents was assessed using both solid phase micro-extraction (SPME) and liquid-liquid extraction (LLE). These are referred as potentially bioaccumulative substances (PBS). For a description of these methods together with an evaluation of their performance, based on an inter-laboratory study undertaken for OSPAR, see Leslie and Leonards [4,5].

The conclusions from the Leonards and Postma study [1] were that;

- Both DOC-die away and Zahn-Wellens degradation approaches are suitable methods to study persistence of constituents in effluents.
- However, the consequences of the addition of the degradation medium, which was monitored shortly after the start of the experiment (t = 4 hours), on toxicity and bioaccumulation was not fully understood. The results showed that changes in toxicity, bioaccumulation, and in the pattern of the constituents of the effluents were already observed after 4 hours. For some effluents the toxicity and bioaccumulation increased and for some effluents the toxicity and bioaccumulation decreased at t = 4 hours. A more detailed study is needed to explain these affects and consequences of the degradation medium in relation to toxicity and bioaccumulation.
- In general, the toxicity and bioaccumulation decreased at the end of degradation studies (14 to 28 days) for both degradation approaches.

- A large proportion of the PBS measured in these oil industry effluents is readily biodegradable. Biodegradation not only lowered the PBS concentration but also toxicity. Appropriate controls are required as some increases in toxic effect were observed after 4 hours and in the saline sample.
- Toxicity was observed for all samples with PBS concentrations above the critical values indicating that narcotic effects are responsible for the observed toxicity.
- These results were subsequently presented [6] and have been submitted for publication [2]. However, as with the conclusions noted above, there were questions asked, and in particular concerning the character of the remaining materials after biodegradation.

Arising from these concerns, CONCAWE developed a study to address the biodegradation characteristics of the components in the effluent. The potential for this type of study to succeed was enhanced by the development of improved analytical techniques and their application to petroleum products (and hence refinery effluents).

Simultaneously for the purposes of risk assessment, the development of the HCB method was underway. This will now be briefly described.

Petroleum substances typically consist of an unknown complex and variable composition of individual hydrocarbons. CAS numbers used to identify petroleum substances are based on various considerations including hydrocarbon type, carbon number, distillation range and the type and severity of processing used in substance manufacture. As a result, petroleum substances with similar composition and use often have different CAS numbers [7]. This complexity in composition and CAS number definition complicates hazard and risk assessment. To characterize hazards, CONCAWE has grouped CAS numbers of petroleum substances derived from petroleum refining into generic categories of products [8].

Petroleum substances typically contain hydrocarbons that exhibit large differences in physical-chemical and fate properties. These properties alter the emissions and environmental distribution of the constituent hydrocarbons, and consequently it is not possible to define a unique Predicted Exposure Concentration (PEC) for a petroleum substance. It is not, therefore, possible to directly apply current risk assessment guidance developed for individual substances to complex petroleum substances. To provide a sound technical basis to assess environmental exposure and risks of petroleum substances, CONCAWE devised the hydrocarbon block method in which constituent hydrocarbons with similar properties are treated as pseudo-components or "hydrocarbon blocks" for which PECs and Predicted No Effects Concentrations (PNECs) can be determined [9]. Risks are then assessed by summing the PEC/PNEC ratios of the constituent blocks. While this conceptual approach has been adopted by the EU as regulatory guidance [10] experience in applying this method has been limited. However, recent studies have demonstrated the utility of the HCB method to gasoline [11-14].

As the methodology has developed, so has the approach for defining the HCBs been refined, and is now standardised across the petroleum products. These blocks form the basis of the computer model that utilises all the previous information for Petroleum Products Risk Assessment that has been termed PETRORISK. In PETRORISK, the standard HCB used, are as follows;

- All blocks are based on 3 carbons, thus blocks are C3, 4, 5, then C6, 7, 8 etc, up to the final block of >C30.
- The principal hydrocarbon classes used are paraffins, iso-paraffins, nC5-based cyclic and nC6-based cyclic mono-naphthenics, other single ring mono–naphthenics, di-naphthenics, n-olefins, iso-olefins, poly-naphthenics, mono-aromatics, di-aromatics, naphthenic-mono-aromatics, naphthenic-di-aromatics, poly-aromatics and sulphur containing molecules.

The methodology used is based the analytical method of 2-dimensional Gas Chromatography or GCxGC, which has been outlined by Forbes et al [15], and described in more detail in CONCAWE Risk Assessment Project [16, 17]. In GCxGC the petroleum sample is subjected to two independent (orthogonal) GC separations, providing far better discrimination of the numerous components than is possible by conventional GC. The first separation is based on volatility differences (i.e. carbon number) between the components whilst the second separation exploits differences in polarity (i.e. functionality). All components are quantified using the universal flame ionization detector (FID), so calibration standards of the individual components are not required for accurate quantitative analysis.

In the project presented in this report, this methodology was developed and validated for application to refinery effluents. The aim of the project was to analyse refinery effluents for the hydrocarbon blocks that are present in petroleum products and to support the risk assessment of those effluents.

2. METHODS AND MATERIALS

2.1. OVERALL PROCESS

The project has been managed by the CONCAWE Special Task Force 32. This STF organised the earlier work reported in the Introduction section and had begun to develop the following stages of which the work reported here is the consequence.

The early stages of this work involved the transfer of the analytical methodology (GCxGC) which Shell had developed for the detailed chemical characterization of gas oils and kerosenes, to IVM. This will be described in the following section (2.3).

The work has also been overseen by the Ecology group in CONCAWE, who have been developing the approach for conducting the risk assessment of petroleum products using the HCB method [3]. This has meant that the output from the project has been developed to address risk assessment purposes under various legislative schemes.

2.2. HYDROCARBON BLOCKING SCHEMES

Quantification of HC blocks was based on four HC blocking schemes (**Tables 1-3**). The original scheme was based on the high priority HC blocks identified in the original CONCAWE Risk Assessments of key petroleum products (respectively gasoline, kerosene and gas oils) but translated to the PETRORISK format, together with the original high priority blocks described in those risk assessments; these are shown in **Table 1**.

To provide an overview of the composition of the hydrocarbons in the effluents a scheme showing all HC blocks in the chromatogram was compiled (**Table 2**).

Finally, using the agreed PETRORISK blocking scheme hydrocarbons were quantified based on the blocks of 3 carbons and the following hydrocarbon classes (**Table 3**): n-paraffins, iso-paraffins, nC5-based cyclic and nC6-based cyclic mono-naphthenics, other single ring mono– naphthenics, di-naphthenics, poly-naphthenics, mono-aromatics, di-aromatics, naphthenic-mono-aromatics, naphthenic-di-aromatics, poly-aromatics, and poly-naphthenics. The n-olefins, iso-olefins, and sulphur containing compounds were not included as separate hydrocarbon groups as they could not be separated from the other hydrocarbon groups with the current GCxGC settings. The **Table 3** format is the method used for communicating the final data sets.

Table 1 HC blocking schemes used for the quantification of hydrocarbons in effluents based on the i) PETRORISK blocking scheme, and ii) the original HC blocks for the risk assessments of gasoline, kerosene and gas oils

Priority HC blocks of PETRORISK blocking system	
A C9-C11 n -/i-paraffins	A
B C12-C14 n -/i-paraffins	B
C C9-C11 mono -naphthenes	C
D C12-C14, mono -naphthenes	D
E C9-C11 di -naphthenes	E
F C12-C14 di -naphthenes	F
G C15-C17 di -naphthenes	G
H C15-C17 mono -aromatics	H
I C15-C17 naphthenic mono -aromatics	I
J C12-C14, di -aromatics	J
K C15-C17 di -aromatics	K

Original HC blocks from the risk assessment	
A C9-C10 n -/i-paraffins	A
B C11 n-/-i-paraffins	B
C C12-C14 n -/-i-paraffins	C
D C9-C11 mono -naphthenes	D
E C12-C13 mono -naphthenes	E
F C11 di-naphthenes	F
G C12-C13 di -naphthenes	G
H C14-C16 di -naphthenes	H
I C15-C16 mono -aromatics	I
J C15-C16 naphthenic mono -aromatics	J
K C14-C15 di -aromatics	K

Table 2 HC blocking scheme to provide an overview of hydrocarbons in the effluents

All HC blocks
C9 - C14 normal and iso paraffins C15 - C20 normal and iso paraffins C21 - C30 normal and iso paraffins >C30 normal and iso paraffins
C9 - C14 mono-naphthenes >C14 mono-naphthenes
Total di-naphthenes
C8 mono-aromatics C9 mono-aromatics C10 mono-aromatics C11 - C14 mono-aromatics C15 - C17 mono-aromatics >C17 mono-aromatics
C10 - C14 naphthenic mono-aromatics C15 - C17 naphthenic mono-aromatics >C17 naphthenic mono-aromatics
C10 - C11 di-aromatics C12 - C17 di-aromatics
C13 -C16 naphthenic di-aromatics
C14-C22 poly-aromatics

Table 3 Full HC block template used for PETRORISK as quantifiable in effluents in this study

	normal paraffins	iso paraffins	n-CC5	n-CC6	mono-naphthenes	di-naphthenes	mono-aromatics	naphthenic mono-aromatics	di-aromatics	naphthenic di-aromatics	Poly-aromatics	poly-naphthenics
C3 - C5												
C6 - C8												
C9 - C11												
C12 - C14												
C15 - C17												
C18 - C20												
C21 - C23												
C24 - C26												
C27 - C29												
C30 - C40												

2.3. ANALYTICAL METHODOLOGICAL TRANSFER AND VALIDATION

2.3.1. Analytical methodological transfer

An analytical GCxGC method developed by Shell [15-17] for the analysis of HC blocks in refinery products was implemented at the Institute for Environmental Studies, VU University (IVM). IVM set-up the Shell GCxGC method and tested the method with diesel fuel, kerosene (jet fuel no. 6, JP-5), and refinery effluent samples. Based on these tests the GCxGC method (GC temperature programme, injection mode, and type of second dimension column) was modified for effluents and type of modulator.

The original program was prepared for direct analysis of hydrocarbon products and injected 0.1 to 0.2 µl of the product in the GCxGC system in split mode (1:200). As the levels of HCs in effluent are relatively low split mode injection was no option as this would have resulted in too high limits of detection (LOD). Instead the injection mode was changed to split less mode with a 1 µl injection, which decreased the LOD by a factor 1000-2000.

The original GC oven program started with an oven temperature of 35ºC. The effluent extracts are dissolved in pentane or dichloromethane with boiling points of 36ºC and 40ºC, respectively, and therefore, the start temperature of the GC oven was set at 40ºC.

The tests showed that under the conditions originally specified — oven ramp of 8ºC/min—the effluent peaks had too much overlap for some HC blocks (e.g. paraffins with naphthenics). Consequently, the GC temperature program was optimised for three classes of compounds:

1. Paraffins, naphthenic-mono-aromatics, naphthenic-di-aromatics, and mono-aromatics (2.5ºC/min)
2. n-C5 based cyclic, n-C6 based cyclic, and other mono-naphthenic compounds (1.5ºC/min)
3. Di- and poly-aromatics (4.5ºC/min)

Furthermore, a HPLC method for the fractionation of hydrocarbons into an aliphatic and an aromatic fraction, which is essential for a reliable quantification of HC blocks, was evaluated at IVM; this method (IP 368), originally developed by the Institute of Petroleum for fractionating oils, had been modified by Shell for fractionating middle distillate fuels. Based on the results a new method with open column silica gel

fractionation was, in cooperation with Shell, developed (see below for more details). A kerosene sample (jet fuel no. 6, JP-5) provided by Shell that has previously been fractionated by HPLC and characterized by GCxGC was used for the validation.

Furthermore, Shell assisted in the identification of unknown peaks in the GCxGC chromatograms, setting the boundaries of HC blocks, and locating specific HC blocks in the chromatograms.

2.3.2. Validation HC blocking speciation method

A method for the analysis of hydrocarbon speciation in refinery effluents was developed and validated. The sample treatment method consisted of five steps:

i) extraction,
ii) concentration,
iii) fractionation,
iv) concentration, and
v) GCxGC-FID analysis.

Both the individual sample treatment steps and the full hydrocarbon block method were validated (see section 3.2).

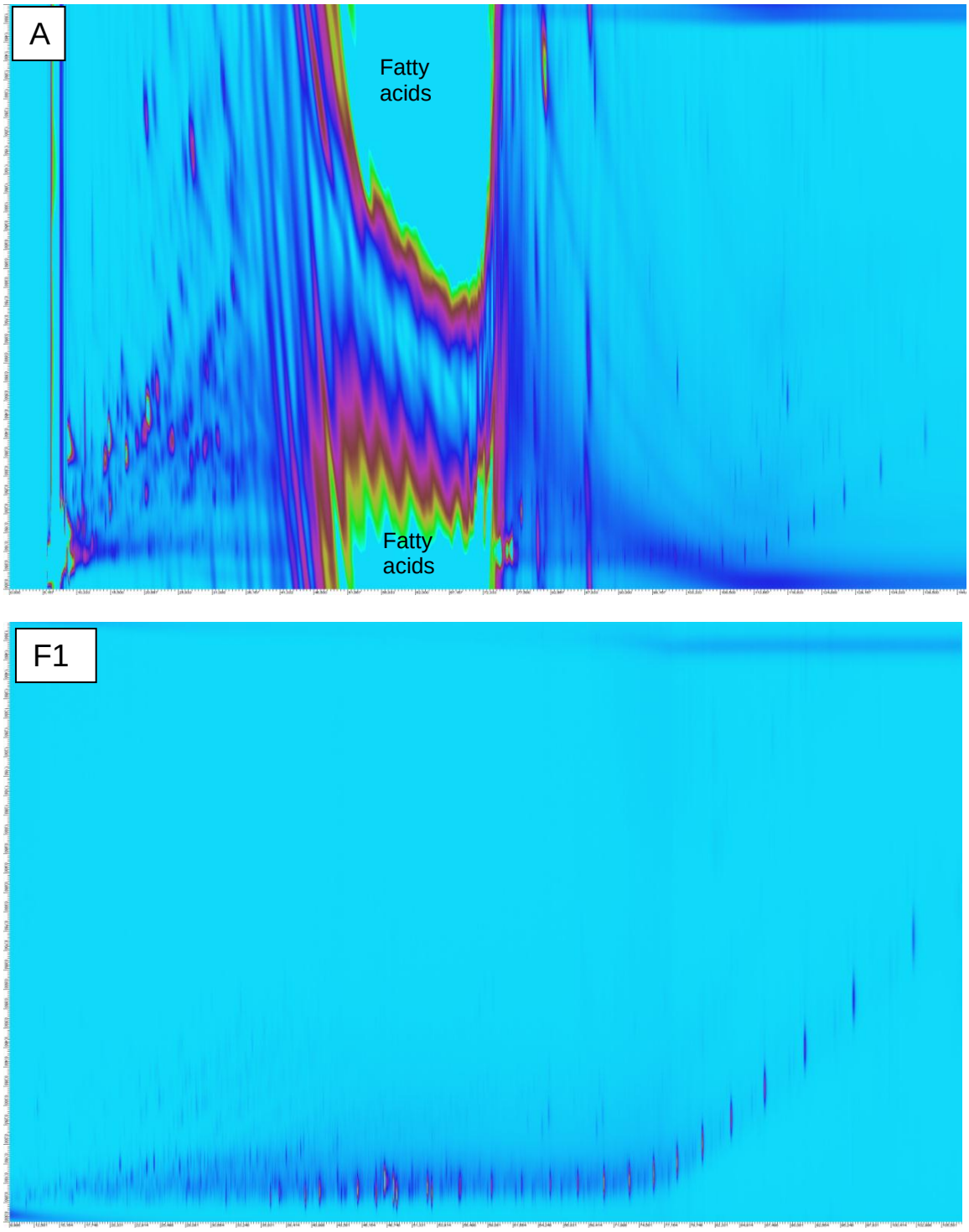
2.3.2.1. Fractionation methods

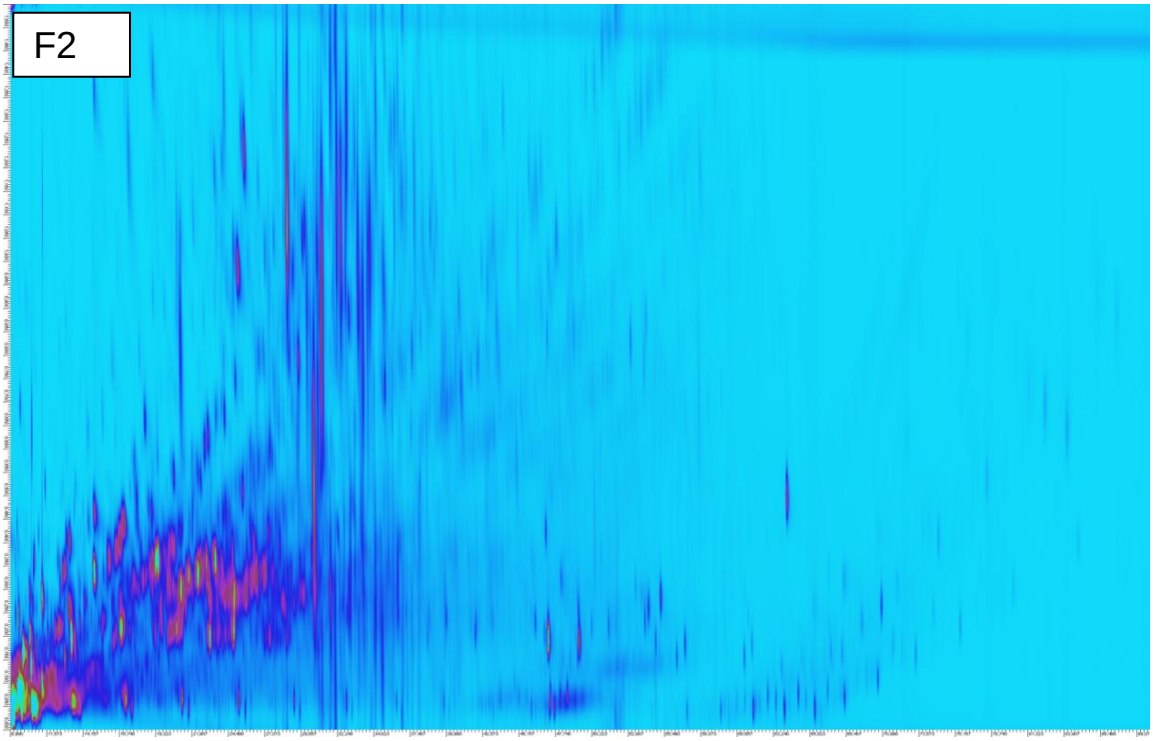
Shell developed a HPLC method for the fractionation of refinery products using a forward flush (pentane) to collect the aliphatic compounds and a backward flush (pentane) to remove the aromatics. For effluent samples the separation of the aliphatics from the aromatics is important, but so also is the elimination of fatty acids that probably originate from the refinery wastewater treatment plants (e.g. bacterial degradation products). Elimination of fatty acids is essential as the peaks interfere with the HC blocks in the GCxGC chromatograms (**Figure 1**). The disadvantage of the HPLC method is that the back-flush mode will not only collect the aromatic compounds but also the fatty acids. Therefore, the HPLC method was not the preferred method for effluent fractionation.

A new method based on open column silica gel fractionation was developed for the fractionation of effluent samples. A kerosene sample (jet fuel no. 6, JP-5) and a mixture of hydrocarbons were used to validate the method. The kerosene sample (200 mg) was fractionated in an aliphatic and aromatic fraction using silica gel (100% activated, 7 g), and two fractions were collected. The first aliphatic fraction was eluted with pentane (25 ml), and the second aromatic fraction with dichloromethane (DCM, 50 ml). Fractions were carefully evaporated using a Kuderna Danish (KD) technique, and finally by nitrogen to dryness to constant weight. An additional evaporation of the second fraction, with a stronger flow of nitrogen, was performed to check the dryness of the second fraction. This experiment was carried out in five-fold.

Recovery experiments with individual hydrocarbons (paraffins, naphthenics, di-aromatics, and poly-aromatics) using the silica fractionation procedure were also carried out. Both fractions were evaporated with a mini KD system (40 ml). The fractions were analysed by GC-MS and the individual hydrocarbons were used for external calibration.

Figure 1 GCxGC chromatograms of an effluent extract (refinery 8.02) before silica fractionation (A), and after silica fractionation in a first (F1) and a second fraction (F2). The interference of fatty acids with the hydrocarbons is shown in Figure 1A. The contour plot shows the retention time of the compounds on the first GC column (*x-axis*), and the retention time on the second GC column (y-axis). Each spot in the contour plot represents a compound and the colour is an indication of the amount, red being the higher concentration.





2.3.2.2. Concentration methods

An important step in the sample treatment procedure is the concentration of extracts. At two stages of the HC speciation method concentration of the organic solvent is needed: i) after extraction of the effluent, and ii) after fractionation. The reduction of the extraction solvent (500 ml DCM) is needed for an accurate silica fractionation, and included a transfer to pentane which is the starting solvent of the fractionation procedure. After silica fractionation concentration of the fractions is needed to be able to reach the desired limits of detection in GCxGC analysis.

Various concentration methods were validated: nitrogen, rotary evaporation, KD, and freeze-drying. In a first experiment a comparison between KD (67ºC, 250 ml), nitrogen (30ºC and 50ºC), and rotary evaporation (30ºC, -720 mbar) was made. A mixture of paraffins and naphthenics was added to pentane (100 ml) and evaporated to 5 ml. Experiments were carried out in triplicate.

Based on these results (Annex 6) a second concentration experiment with nitrogen and freeze-drying was carried out, techniques that are suitable to concentrate samples to very small volumes (100-200 µl). Two millilitres of a mixture of paraffins, naphthenics, mono-aromatics, di-aromatics, and poly-aromatics was concentrated to 100-200 µl with nitrogen or by freeze-drying. The mixture consisted of: trimethyl-cyclohexane, nonane, 2-methylnonane, decahydronaphthalene, tridecane, pristane, octadecane, C9-alkylbenzenes, C10-alkylbenzenes, C11-alkylbenzenes, C12-alkylbenzenes, naphthalene, methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, chrysene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene. Results are presented in Annex 7.

2.3.2.3. Full HC block method.

To determine the recoveries of the full HC block method recovery experiments with spiked water with a mixture of hydrocarbons were conducted. A glass bottle (11 l) was filled with 11 l demi-water and spiked (acetone) with paraffins, naphthenics, and poly-aromatics, and the bottle was closed without headspace and stirred for 48 hrs (**Table 4**). The final concentration of the compounds in the water varied between 2 and 0.02 µg/l. In addition, two bottles without spike solution were prepared and used as blank controls.

Table 4 Mixture of hydrocarbons used for the full HC block method validation

Compound	Concentration in water (µg/l)
Nonane	2
2-Methylnonane	2
Decahydronaphthalene	2
1,1,3-Trimethylcyclohexane	2
Tridecane	0.05
Octadecane	0.05
Pristane	0.05
Anthracene	0.05
Pyrene	0.05
1-Methylphenanthrene	0.05
2-Methylphenanthrene	0.05
3-Methylphenanthrene	0.05
9-Methylphenanthrene	0.05
1,7-Dimethylphenanthrene	0.04
1-Methylpyrene	0.02
4-Methylpyrene	0.02
Retene*	0.05
3-Methylchrysene	0.02
6-Methylchrysene	0.02

*1-methyl-7-isopropyl phenanthrene

After 48 hrs of stirring 500 ml of water was removed, then 500 ml dichloromethane (DCM) was added and the bottles were closed (without headspace), and stirred for another 48 hrs. The removed 500 ml was liquid-liquid extract with DCM and analysed by GC-MS to quantify the HC concentrations (T=0). After 48 hrs the DCM layer was separated from the water. The DCM layer was dried with sodium sulphate, and evaporated with KD (250 ml) to 10-15 ml. Then the extract was transferred to a mini KD system (40 ml) to reduce the volume to 1 ml. One ml of pentane was added and evaporated to 1 ml. Next, the extract was fractionated with silica as described above (100% activated silica, 7 g). Two fractions, 25 ml pentane and 50 ml DCM, were collected. The fractions were evaporated with a mini KD to 1 ml, deuterated PAHs were added as internal standards, and finally analysed by GC-MS. The experiment was carried out in triplicate. Recoveries were calculated based on the measured concentrations at T=0 and T=48 hrs.

The full hydrocarbon speciation method was also assessed with two refinery effluents to show the applicability of the method to actual samples.

2.4. SAMPLING PROCESS AND METHODS

Before effluent sampling CONCAWE contacted and informed the refineries of the project and what they should expect. For each sampling a sample kit was prepared by IVM containing a background document prepared by CONCAWE (Annex 2), a sampling protocol (Annex 3), sampling bottles, safety material, and a sample information sheet (Annex 4). The sample protocol was optimised for the collection and determination of hydrocarbons (C9 and higher) and metals. Sample bottles were pre-cleaned according to protocols for metals (1 M nitric acid) and organic substance analysis (hot water, acetone, hot water, cold water, demineralised water, and drying step) before shipment.

The sample information sheet asked for information on sample time, date, location, type of effluent, and details of water treatment prior to the sample location (e.g. biological treatment, DAF, interceptor etc.).

The effluent discharge samples[1] were collected from the refinery's usual sampling point (i.e. the one where samples for Oil in Water (OiW) analysis are collected), and were freshly collected spot samples. A 20 l sample for hydrocarbon analysis (HC blocks and OiW analysis) was collected in a stainless steel container with the addition of nitric acid (500 ml, 4% nitric acid) as preservation agent. A plastic bottle was used for metal analysis. All bottles were completely filled, leaving no headspace. The instructions were to avoid exposing the contents of the bottles to light or heat, and complete the sample information sheet. The bottles were returned as fast as possible by courier to the laboratory (IVM) for chemical analysis.

Sample collection started with the shipment of 19 sampling kits. Returned samples were split in samples for OiW, HCBs determination with GCxGC, BTEX and chlorinated aliphatic analysis which were taken from the stainless steel container. Subsamples for metals and other inorganic parameters (pH, conductivity, BOD, COD, TOC and DOC) were taken from the plastic bottle. The laboratory of IVM determined the HC blocks, pH and conductivity. The OiW, BTEX, metals, and other inorganic parameters were determined by Omegam laboratories (Amsterdam) which is accredited according to NEN-EN-ISO/IEC 17025.

After chemical analysis the stainless steel containers were cleaned according to the protocol and new sampling kits were prepared. New sampling kits were shipped in batches according to the refinery lists as provided by CONCAWE.

2.5. ANALYTICAL METHODS

2.5.1. Volatile organic compounds

Volatile Organic Compounds (VOCs) were determined by the laboratory of Omegam using their in-house developed method based on NEN-EN-ISO 15680. The sample is purged by helium, and the helium stream was cooled in an adsorption tube to trap the VOCs. The adsorption tube was heated and transferred to a GC-MS system. Benzene, toluene, ethylbenzene, m-xylene, o-xylene, p-xylene (BTEX) and the

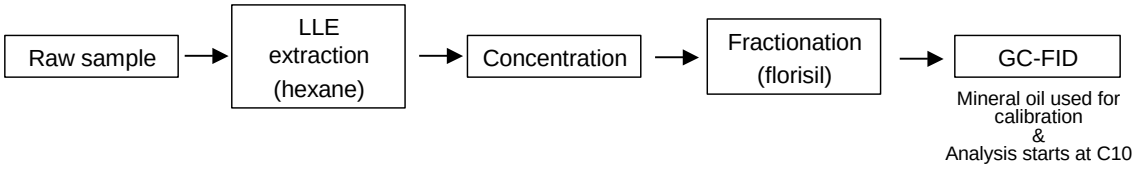
[1] To enable a fair comparison, all refinery effluent samples are taken at the point where these leave the location. Hence, after on-site treatment but before external treatment, when the final waste water treatment is performed off-site.

following chloro-aliphatics and chloro-aromatics were determined: dichloromethane, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethene, cis-1,2-dichloroethene, 1,2-dichloropropane, trichloromethane, tetrachloromethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, tetrachloroethene, monochlorobenzene, 1,2-dichlorobenzene,1,3-dichlorobenzene, 1,4-dichlorobenzene. The performance characteristics are: Limit of quantification 0.01-0.03 µg/l, measurement uncertainty 25%, recovery 60-120%.

2.5.2. Oil in Water

Oil in water (OiW) was analysed by the laboratory of Omegam (Amsterdam) according to an in-house developed method. The effluent was liquid-liquid extracted with hexane, followed by a concentration step and a clean-up with florisil. The florisil extract was measured with GC-FID. Quantification was performed between C10 and C40, and a mineral oil standard was used for external calibration. An overview of the method is provided in **Figure 2**. The performance characteristics of the method are: Limit of quantification 0.05 mg/l, measurement uncertainty 30%, recovery 70-110%. The QA/QC consists of a control sample in water and the participation in inter-laboratory studies organised by the Waterdienst (Lelystad, The Netherlands).

Figure 2 Schematic diagram analysis of oil in water analysis with GC-FID



2.5.3. Full hydrocarbon speciation by GCxGC

For the speciation of HCBs the effluent was extraction in two 5 l glass bottles each containing 250 ml DCM. The bottles were closed without headspace. The effluent was stirred 48 hours. Next, the DCM layer was separated from the effluent, and dried with sodium sulphate. An aliquot of the extract (1 ml) was stored in a GC vial at -80ºC (this fraction was labelled VOC fraction, see **Figure 3**).

The remaining DCM extract was carefully evaporated with KD (250 ml system) to 10-15 ml. The extract was transferred to a mini KD system and carefully reduced to 1-3 ml. An aliquot (~20 % of the extract) was stored in a glass vial and stored at -80ºC for additional WEA studies. One ml of pentane was added to the residual extract and transferred to a glass vial, covered with aluminium foil, and cooled to -80ºC. The cooled extract was freeze-dried to reduce the volume to 100 to 200 µl.

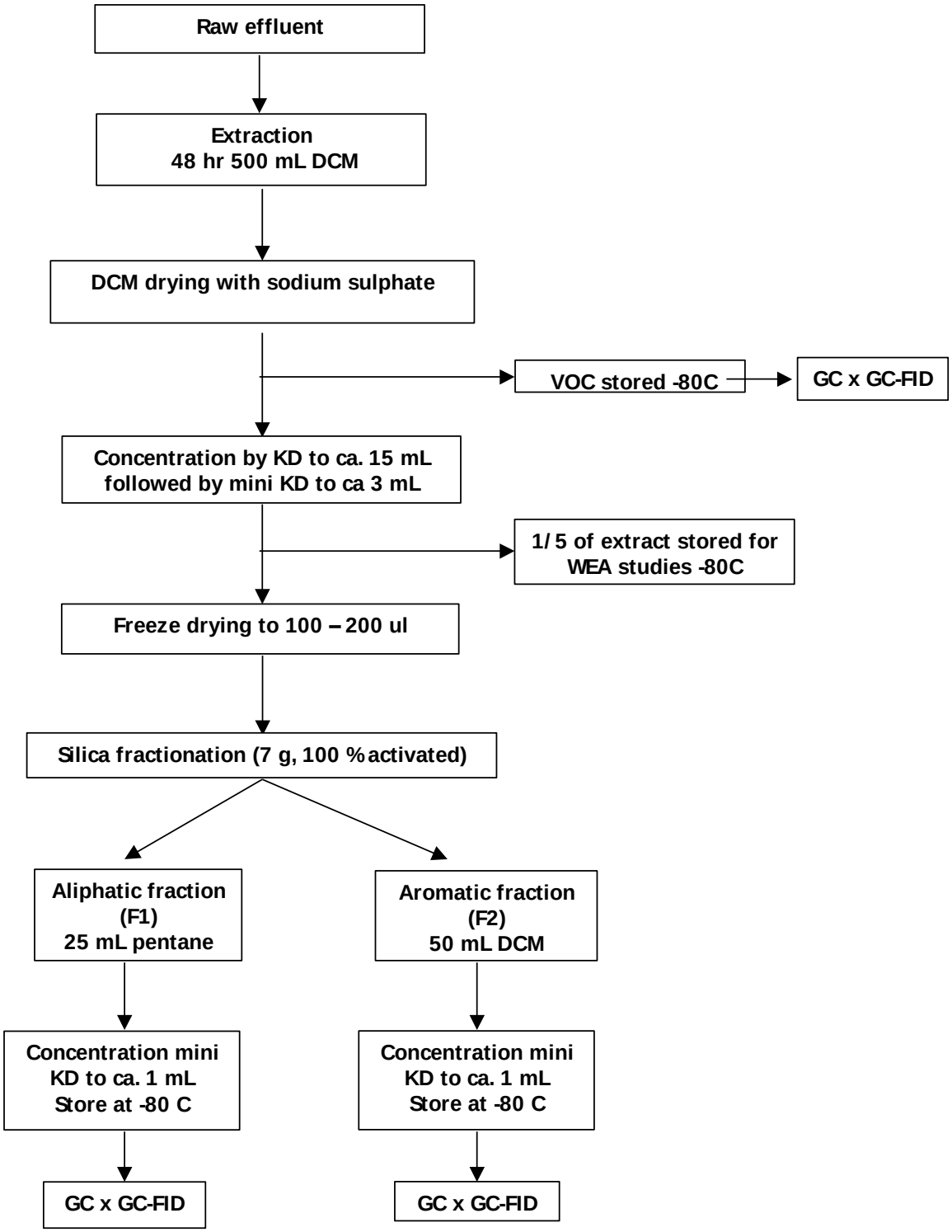
Two ml of pentane was added and fractionated with silica gel according to the protocol described above. An aliphatic fraction and an aromatic fraction were collected and evaporated to 0.5 to 1 ml with KD, and analysed by GCxGC. All extracts were weighed to be able to calculate the final concentrations of hydrocarbons. An Agilent 7890A gas chromatograph (GC) with capillary flow technology as modulator, and flame ionisation detection (FID) with a scan speed of 200 Hz was used as GCxGC system. The FID detector was operated at 300ºC. One µl of the final extract was split less injected at 300ºC.

As a first dimension column a DB-1MS (30 m x 0.25 mm x 0.1 µm) and as second dimension column a HP-Innowax (5 m x 0.25 mm x 0.1 µm) were used. For the analysis of the aliphatic fraction the GC temperature programme started at 40ºC for 1 min, followed by an increase of 2.5ºC/min to 270ºC and kept for 35 min. The second GC column was placed in a second GC oven that was programmed 20ºC higher than the first oven, but following the same ramps and hold times.

For the determination of the n-C5 based cyclic, n-C6 based cyclic, and other mono-naphthenic compounds a reduced temperature programme was used to increase the separation of the naphthenics from the paraffins. Naphthenic analysis started at 40ºC for 1 min, followed by an increase of 1.5ºC/min to 270 ºC and kept for 70 min, the second GC oven followed the first oven without an additional temperature setting. The aromatic fraction was analysed with a GC programme starting at 40ºC for 1 min, followed by an increase of 4.5ºC/min to 270 ºC and kept for 18 min, without the use of a second GC oven.

For quantification of the hydrocarbon blocks an external calibration with 2,3-dimethylnaphthalene was applied as this compound has an average response factor. Integration and peak labelling was performed with the software package GC Image version 1.9 (Zoex). HC blocks were marked in the GCxGC chromatogram based on analytical standards (n-paraffins, iso-paraffins, naphthenes, olefins, naphthenic-mono-aromatics, mono-aromatics, di-aromatics, poly-aromatics, poly-naphthenics), diesel and kerosene. A template for HC blocks was prepared for every new GC sequence. For samples the background of the GCxGC chromatogram was subtracted and the individual compounds of a HC block were identified, marked and labelled according to the template, and manually verified. In addition to the quantification of HC blocks, quantification of all peaks in the GCxGC chromatogram was also performed (without the solvent injection peaks) and labelled as “all GCxGC peaks” (i.e. sum of all the sample peaks present in chromatogram).

Figure 3 Schematic diagram of the sample treatment steps for the full hydrocarbon speciation analysis



With the current method quantification of olefins was not possible as these compounds interfere with the naphthenics.

Quantification of the n-CC5 based cyclic and n-CC6 based cyclic peaks showed that a complete overlap between n-CC5 and n-CC6 for the C15-C17 group, the C18-C20 group, and for the C30-C40 group exists. For the other n-CC5 and n-CC6 based cyclic compounds the effluents showed in general equal concentrations for n-CC5 and n-CC6. Therefore, the concentrations of n-CC5 and of n-CC6 for the HC blocks C15-C17, C18-C20, and C30-C40 was set at half of the concentration of the sum of n-CC5+n-CC6.

Limited information is available on the separation and identification of poly-naphthenics in hydrocarbon products. Frysinger and Gaines [18] studied the separation and identification of petroleum biomarkers using GCxGC. They identified a number of steranes, triterpanes, and triaromatic steranes in crude oil. In cooperation with Shell and the use of a number of poly-naphthenic standards (17b(H)-21b(H) hopane 5-a-chlolestane, prednisolone), the HC blocks of the poly-naphthenics were marked in the GCxGC chromatograms. The test of the standards showed that some HC chain lengths overlap, e.g. some C21 poly-naphthenics elute in the retention area of C20 poly-naphthenics. A more extensive study will be needed to further separate and identify the peaks in the poly-naphthenics area to get a reliable quantification method. Further, due to a limited number of analytical standards identification is partly hindered. The results of the poly-naphthenics are therefore semi-quantitative.

2.5.4. Quality control during refinery effluent analysis

Quality control checks were performed during the analysis of the refinery effluents. In a number of samples duplicate analysis in combination with the homogeneity of the sample in the stainless steel container, blanks, and a total extraction of the stainless container walls after removal of the effluent were performed. The quality control results are discussed in section 3.3.

Duplicate analyses were carried out to determine i) the coefficient of variation of the HC blocks and oil in water (OiW) analysis, and ii) to verify the homogeneity of the sample in the container. Therefore, 12 samples (11% of the effluents), with low (<0.05 mg/l) to high (28 mg/l) OiW contents, were sampled according to the following protocol. Firstly, 1 l of effluent was taken for OiW analysis, secondly 11 l for full hydrocarbon speciation GCxGC analysis, thirdly 5 l for full hydrocarbon speciation GCxGC analysis (6 effluents analysed only), and finally 1 l for OiW analysis.

With every 10 samples a procedural blank consisting of 10 l demi-water was extracted according to the full hydrocarbon speciation protocol. To verify how much oil was retained onto the walls of the stainless steel container 4 effluent sample containers, after complete removal of the effluent, were extracted 3 times with DCM. The DCM was concentrated with KD and measured with GCxGC-FID.

At the IVM laboratory quality assurance is regarded an essential and crucial part of the chemical and biological analysis, and sample collection. Routinely measures include analysis of blanks, accuracy and precision measurements, participation in inter-laboratory studies, analysis of certified reference materials. Furthermore, the institute has organised inter-laboratory studies on PCBs, BFRs, PAHs, organo-tin compounds, and perfluorinated compounds and is seated in the scientific

assessment group of the QUASIMEME ILS organisation. The laboratory was recently accredited by the EU-Institute for Reference Materials and Measurements (IRMM) for the analysis of organic chemicals.

2.5.5. Metals

For metal analysis the effluent was first treated with nitric acid and hydrochloric acid to ensure the metals were all in solution according to NEN-EN-ISO 17294-2 and NEN-EN 1483. The treated sample was analysed with ICP-MS and the following elements were determined: As, Cd, Cr, Co, Cu, Hg, Pb, Ni, V, Zn. External calibration was performed. These analyses were performed at the laboratory of Omegam (Amsterdam). Performance characteristics of the method are:

Limit of quantification:	0.1 -17 µg/l,
Recovery:	80-110%,
Measurement uncertainty	8-20%.

2.5.6. Other inorganics

Chemical oxygen demand (COD) was determined with a titrimetric method according to NEN 6633. The effluent was refluxed for 2 hrs with potassium chromate in sulphuric acid. The used potassium chromate was titrimetrically determined. Biological oxygen demand (BOD) was determined by adding a mixture of salts and microorganism and measuring the oxygen demand before and after an inoculation period of 5 days at 20ºC according to NEN-EN-1899. Total organic carbon (TOC) was analysed at a high temperature (950ºC) measuring the carbon dioxide levels using IR-spectrometry according to the NEN-EN 1484. The analyses of the other inorganics were performed at the laboratory of Omegam (Amsterdam).

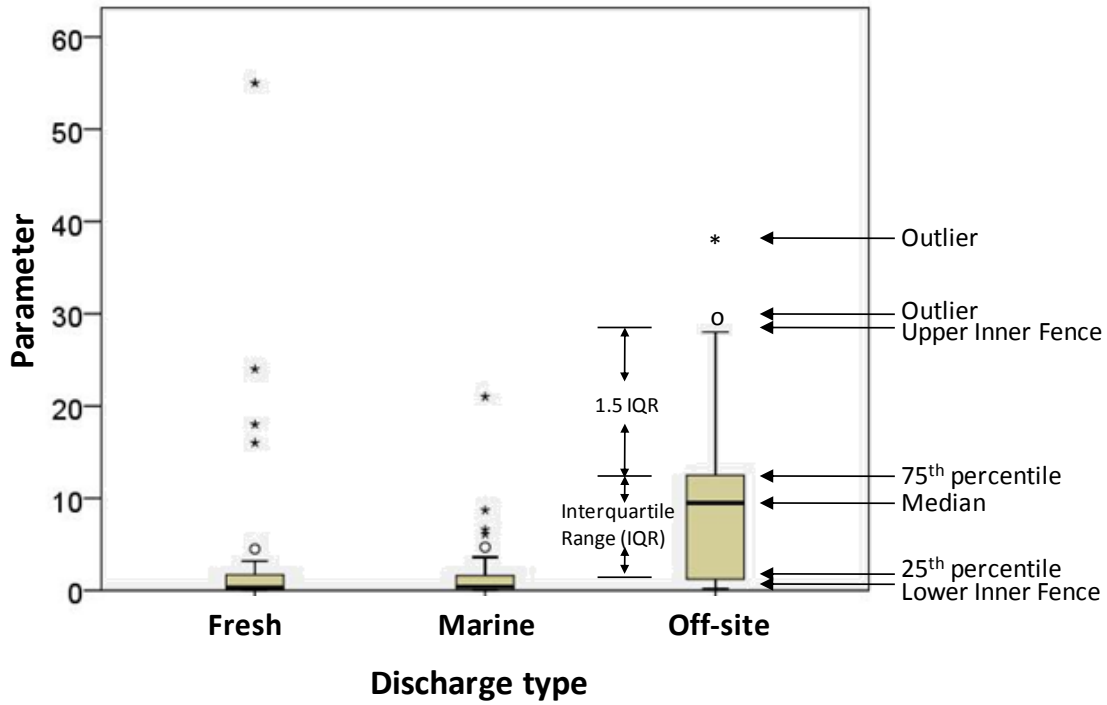
2.5.7. Statistics

The samples of the refineries were classified in discharging their effluents to i) freshwater, ii) marine waters, or iii) to an off-site waste water treatment plant (WWTP). To obtain an overview of the measured parameters the data were plotted in Box and Whisker plots. In general, the Box and Whisker plots[2] show the median, 25th and 75th percentiles, Upper and Lower Inner Fences, and outliers, see Figure 4. The Upper and Lower Inner Fences are calculated by multiplying the inter-quartile range (IQR) with 1.5.

To show if the OiW content was significantly different at the top and bottom of the stainless steel container a paired-sample T-test was applied.

[2] Box-Whisker plots are statistical data presentations that display differences between populations without making any assumptions of the underlying statistical distribution: they are non-parametric. A Box-Whisker plot illustrates the spread of a set of data and allows comparison of data sets of different sample size. See also http://en.wikipedia.org/wiki/Box_plot

Figure 4 The general lay-out of a Box and Whisker plot.

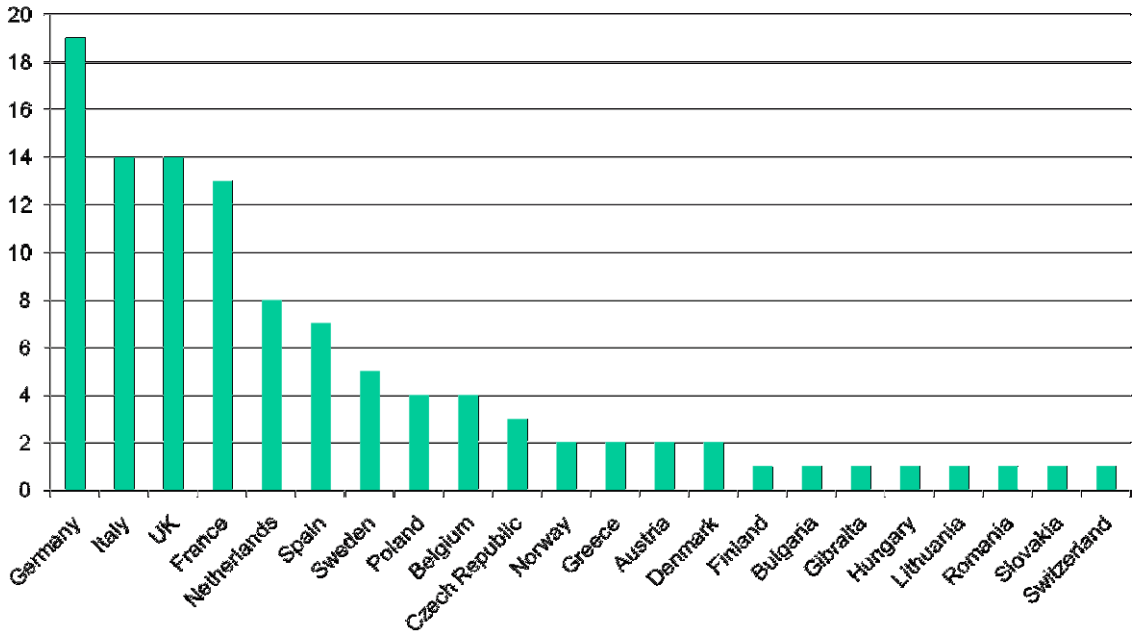


3. RESULTS AND DISCUSSION

3.1. OVERVIEW OF REFINERY RESPONSES AND COVERAGE

In total 122 sampling kits were shipped to 117 European refineries, of which 105 refineries from 22 countries, returned 111 samples for the hydrocarbon speciation project (**Figure 5**). Two refineries did not deliver a sample, as the sample would not be representative for a refinery effluent. One refinery did not want to participate. Two refineries were unable to add the nitric acid to the container due to problems with shipment regulations. Additional information on the sampling time, date, type of refinery and waste water treatment plant were provided by the refineries and are stored as a pdf-file at CONCAWE.

Figure 5 Number of samples per country selected in the CONCAWE hydrocarbon speciation project



3.2. VALIDATION OF THE HYDROCARBON SPECIATION METHOD

In the next sections the results of the validation of the different steps of the full hydrocarbon speciation analysis including GCxGC analysis are provided.

3.2.1. Silica fractionation

The average recovery (aliphatic + aromatic fractions) of the kerosene sample was 94% with a variation coefficient of 2.8% (Annex 5a). On average 75% of the compounds were recovered in the first fraction (aliphatic compounds); these recoveries were similar to those obtained by Shell. In the second fraction an average recovery of the aromatics of 27% (CV 2.8%) was found. After an additional evaporation step of the second fraction the recoveries reduced slightly

approximately 20%, but the variation increased (10%) probably due to the loss of more volatile mono-aromatics.

The recovery experiment with the mixture of hydrocarbons showed that the first fraction, as expected, contained the aliphatic compounds, and the second fraction the aromatic compounds (Annex 5b). The average recoveries varied between 40% and 128%. The lowest recovery (40%) was found for the most volatile compound (trimethylcyclohexane), and was probably the result of the evaporation step and not due to the silica fractionation. Recoveries of nonane and higher boiling compounds were >100%. The coefficients of variations were between 3% and 10%. In conclusion, the silica method showed satisfactory recoveries with a good repeatability.

3.2.2. Concentration methods

Recoveries of the test compounds using four different concentration methods are given in **Figure 6** and Annex 6. These results show that the recoveries for all compounds are acceptable for the KD technique (70-100%), except for the most volatile compound 1,1,3-trimethylcyclohexane (36%). The other techniques show similar recoveries for the less volatile compounds (n-tridecane, pristane and n-octadecane), but have larger standard deviations than KD, as presented in **Figure 6**. The more volatile compounds are partially lost by the nitrogen and rotary evaporation techniques (**Figure 6**), and these methods are therefore less preferred to use in our procedure. A good correlation between the boiling point and recoveries of the compounds is found (**Figure 7**).

Two methods were validated for the evaporation of samples to a small volume (100-200 µl), evaporation using nitrogen gas and freeze-drying. It is important that most of the DCM is removed before the silica fractionation step, otherwise aromatic compounds will elute together with the first (aliphatic) fraction instead of the (second) aromatic fraction. The maximum amount of DCM allowed in the extract for silica fractionation was found to be 10%. Freeze-drying was the preferred method with recoveries >84% and variation coefficients <10% for the test compounds, except for the most volatile compound (trimethylcyclohexane) that had a recovery of 57% (**Figure 6**, and Annex 7).

Figure 6 Results of the concentration method comparison studies for hydrocarbons in an organic solvent. Five types of evaporation techniques were evaluated: KD: Kuderna Danish (250 ml); nitrogen at 30ºC and 50ºC, rotary evaporation at 30ºC, and freeze-drying. Shown are the average and standard deviations based on a triplicate test.

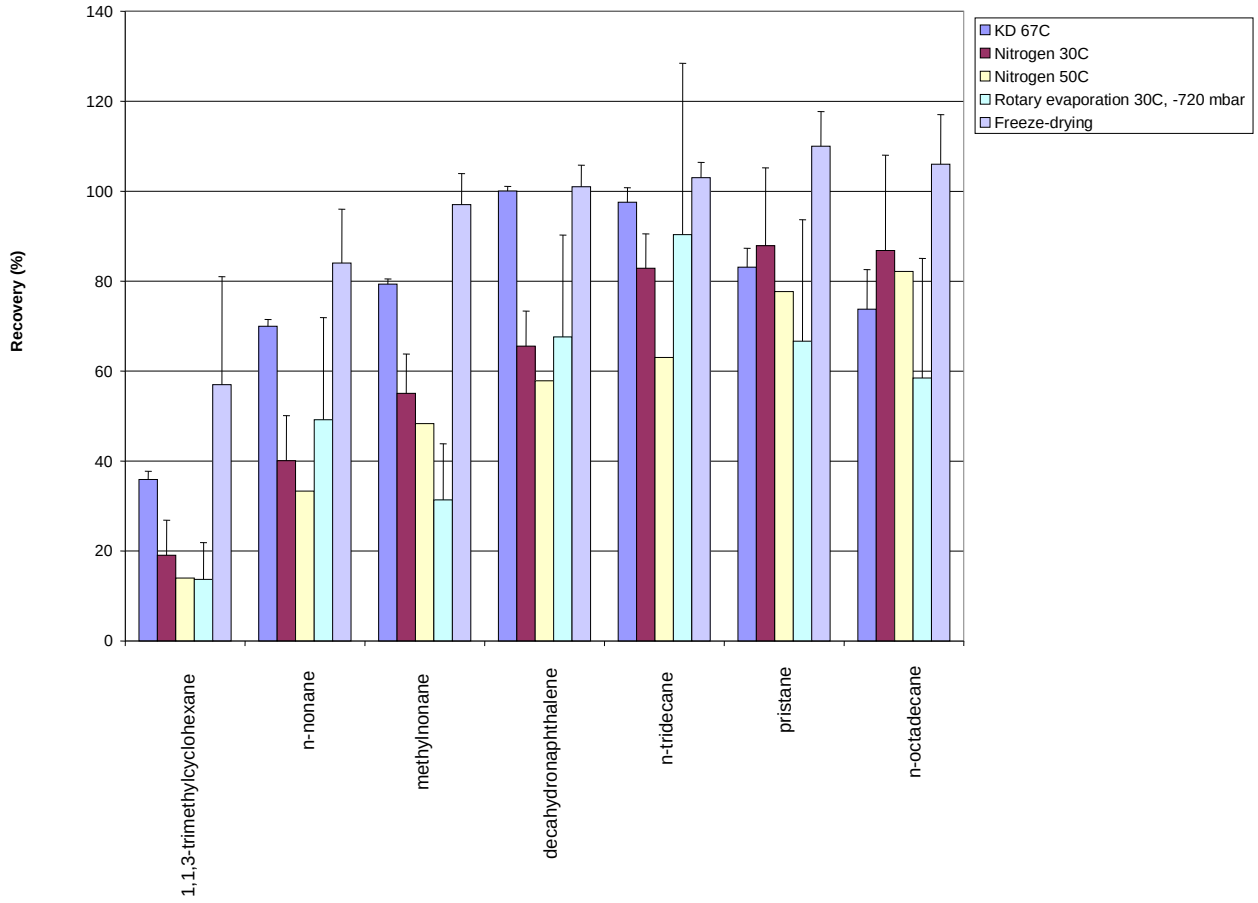
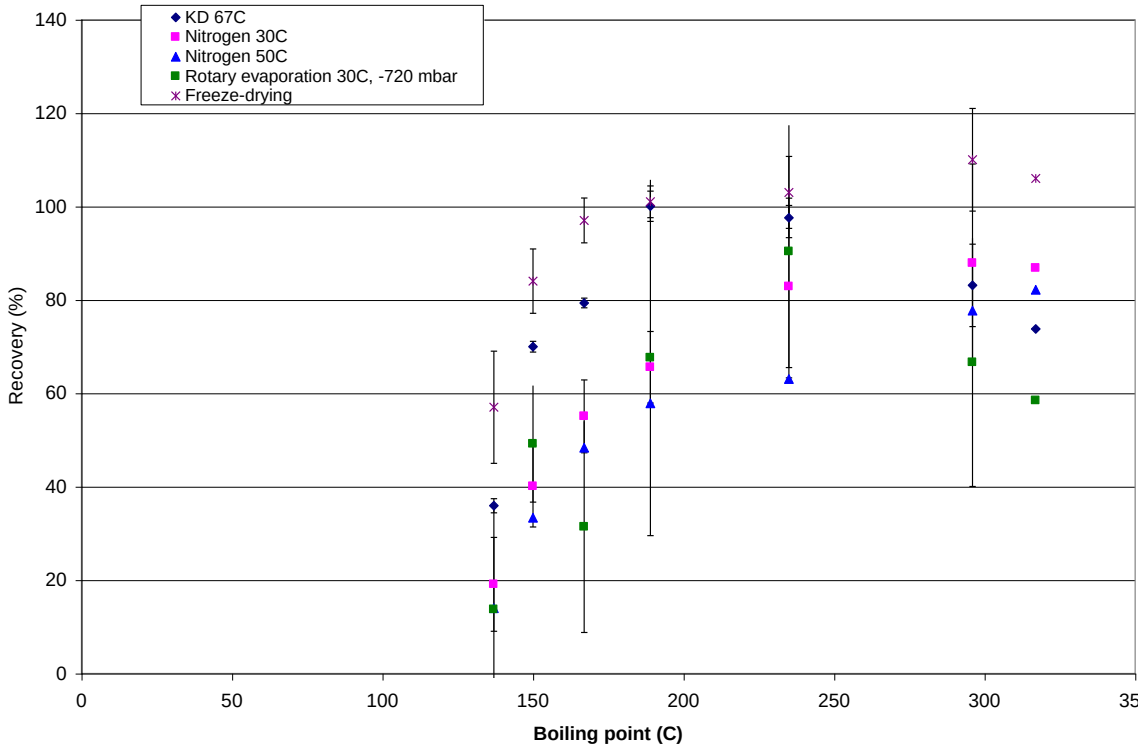


Figure 7 Recoveries of the test compounds related to the boiling point using five different concentration methods and their standard deviations.



3.2.3. Full HC block speciation method

Validation of the full hydrocarbon speciation method was based on spiked water with paraffins, naphthenics, di-aromatics and poly-aromatics. The average recoveries of the spiked compounds varied between 45% and 129% (**Figure 8** and Annex 7). In general, the recoveries were above 80%, except for trimethylcyclohexane, the most volatile compound that had a recovery of 45%. The coefficient of variation varied between 1% and 28%. In conclusion, the data concerning the recovery of the hydrocarbons and the repeatability of those recoveries were found to be satisfactory.

Validation of the method with effluents showed that the method was able to separate the hydrocarbons into an aliphatic and aromatic fraction, with the exception that the mono-aromatics and naphthalene both eluted in the first fraction. Fatty acids were not present in the GCxGC chromatograms. As an example the GCxGC-FID chromatograms of the first and second fraction of an effluent (6.6 mg/l OiW) are shown (**Figure 9**).

Figure 8 Average and standard deviations of the recoveries of spiked hydrocarbon compounds in water using the full hydrocarbon speciation method (DCM extraction, evaporation and fractionation). An interfering peak with methylnonane made quantification less reliable, and was therefore not reported.

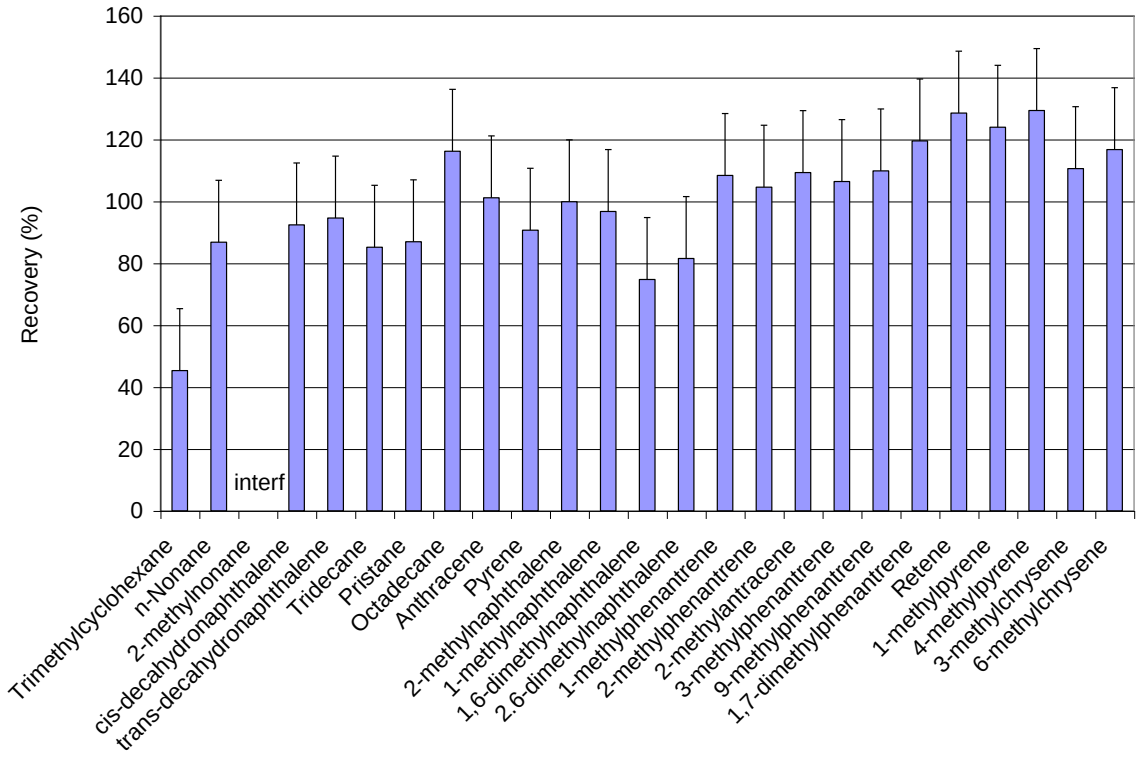
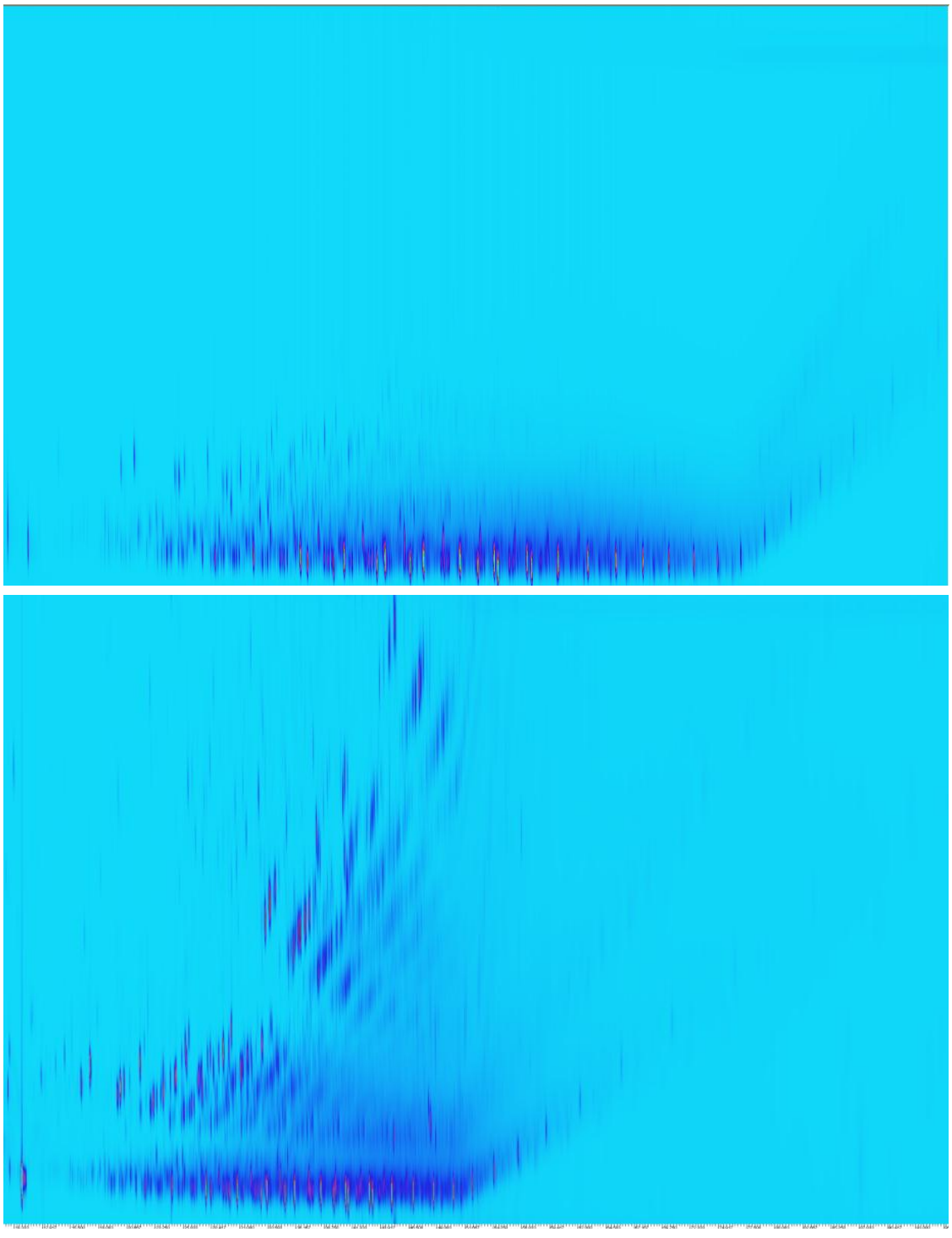


Figure 9 GCxGC-FID chromatograms of an effluent sample (6.6 mg/l OiW) using the full hydrocarbon speciation method. The upper figure shows the first aliphatic fraction and the lower figure the second aromatic fraction. The contour plot shows the retention time of the compounds on the first GC column (*x-axis*), and the retention time on the second GC column (y-axis). Each spot in the contour plot represents a compound and the colour is an indication of the amount, red being the higher concentration.



3.3. QUALITY CONTROL DURING REFINERY EFFLUENT ANALYSIS

The procedural blank samples showed very low levels of hydrocarbon compounds. Mainly, traces of n-paraffins were found. Blank levels were marginal compared to the levels found in the effluents, therefore, the levels in the effluents were not corrected for blank values.

Duplicate analysis of 11 samples showed for the OiW analysis an average variation coefficient (CV) of 15%, and a range of 5 - 42% (**Table 5**). The highest CV was found in a low level OiW content sample that was close to the limit of detection. The average CV for the quantification of all peaks in the GCxGC chromatogram was 18%, with range of 1 - 41%. For the individual HC blocks the CVs varied between 1% and 88% which mainly depended on the concentration (0.0002-2.3 mg/l).

No significant difference in OiW content between samples taken at the top or at the bottom of the stainless steel 20 l container were found, see **Table 6** (paired-sample T-test, t -1.295, df 8, p=0.23).

Extraction of the stainless steel containers after removal of the effluent showed that on average 17% of the hydrocarbons was retained on the walls (**Table 7**). There was one exception, for a sample with the highest OiW (55 mg/l) of all 111 samples analysed. For this sample 40% of the hydrocarbons were retained in the empty container. It was anticipated that at this high oil content a large part of the oil is not dissolved in the water but is floating on the water surface. The hydrocarbon pattern (GCxGC analysis) of the oil remaining on the side of the container was not different from the pattern found in the bulk effluent sample. In conclusion, the level of hydrocarbon recovery from the containers was considered to be acceptable.

Table 5 Duplicate OiW and full hydrocarbon block speciation by GCxGC analysis. Shown are the average concentrations and coefficient of variation found in the 11 refinery samples.

	OiW		**GCxGC (all peaks)**		**GCxGC HC blocks**	
Refinery code	**AVG mg/l**	**CV %**	**AVG mg/l**	**CV %**	**AVG mg/l**	**CV %**
5.04A	3.4	8				
21.03	0.52	8				
8.07	0.22	26				
12.03	<0.05					
6.08N	<0.05					
4.01	<0.05		0.07	16	0.0004-0.002	5-66
13.13	28	20	35	14	0.1-2.3	1-55
13.04	23		4.1	2	0.004-0.7	1-48
8.04N	9.2	5	2.3	41	0.003-1.2	2-55
5.16	0.40	9	0.62	17	0.0003-0.02	1-56
5.04B	0.30	2	0.29	11	0.001-0.01	8-42
7.03	0.09	42	0.15	1	0.0002-0.006	1-88

Table 6 OiW content of sample taken at the top or at the bottom of the stainless steel 20 l container

Refinery	Top of container	Bottom of container
Code	**mg/l**	**mg/l**
5.04	3.2	3.6
21.03	0.55	0.49
8.07	0.18	0.26
12.03	0.07	<0.05
6.08N	<0.05	<0.05
4.01	<0.05	<0.05
13.13	24	32
13.04	21	24
8.04N	9.5	8.8
5.16	0.37	0.41
5.04_2	0.29	0.3
7.03	0.11	0.06

Table 7 Percentage of hydrocarbons retained in 20 l stainless steel container after removal of all effluent

Refinery code	OiW mg/l	Percentage retained in 20L stainless steel container
5.16	0.37	13
7.03	0.11	5
13.04	21	12
21.03	0.55	16
8.30	55	40

3.4. LEVELS IN EFFLUENTS

In the next sections an overview of the levels of volatile organic compounds, HC blocks, metals and other inorganic compounds are presented. The refineries were classified in discharging their effluents to i) freshwater, ii) marine waters, or iii) off-site to a waste water treatment plant (WWTP). The individual refinery data are all available on a CD which accompanies this report, coded as per the CONCAWE system.

3.4.1. Hydrocarbon blocks

3.4.1.1. OiW and HC blocks by GCxGC analyses

The concentrations of oil in water (OiW) ranged from below the limit of detection (<0.05 mg/l) to a maximum of 55 mg/l (**Table 8**). In all off-site effluents OiW could be determined, and in 70% and 84% of the fresh and marine water discharging effluents, respectively. The average OiW concentration was significantly higher in the off-site discharging refineries than in the fresh and marine discharging refineries (ANOVA with Tukey test (**Table 8**). A difference in average concentration between discharge groups is indicated, in the tables below, by letters after the average

concentration. If groups are significantly different they have different letters. For instance, OiW in the fresh and marine discharging effluents have letter “A” which indicates that the average concentrations are not significant different. However, the off-site discharging refineries have letter “B” which indicates that they are significantly different from the fresh and marine discharging effluents. The median concentration in effluents discharging to the fresh and marine environment (0.35 and 0.46 mg/l, respectively) is lower than that in effluents which are discharged to offsite WWTP (9.6 mg/l). However, some of the effluents discharged directly to the fresh and marine environment have relatively high OiW contents (>5 mg/l) and high GCxGC levels as can be seen in the outliers in the Box-Whisker plots (**Figures 10** and **11**).

Figure 10 Box-Whisker plot of OiW levels in effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs

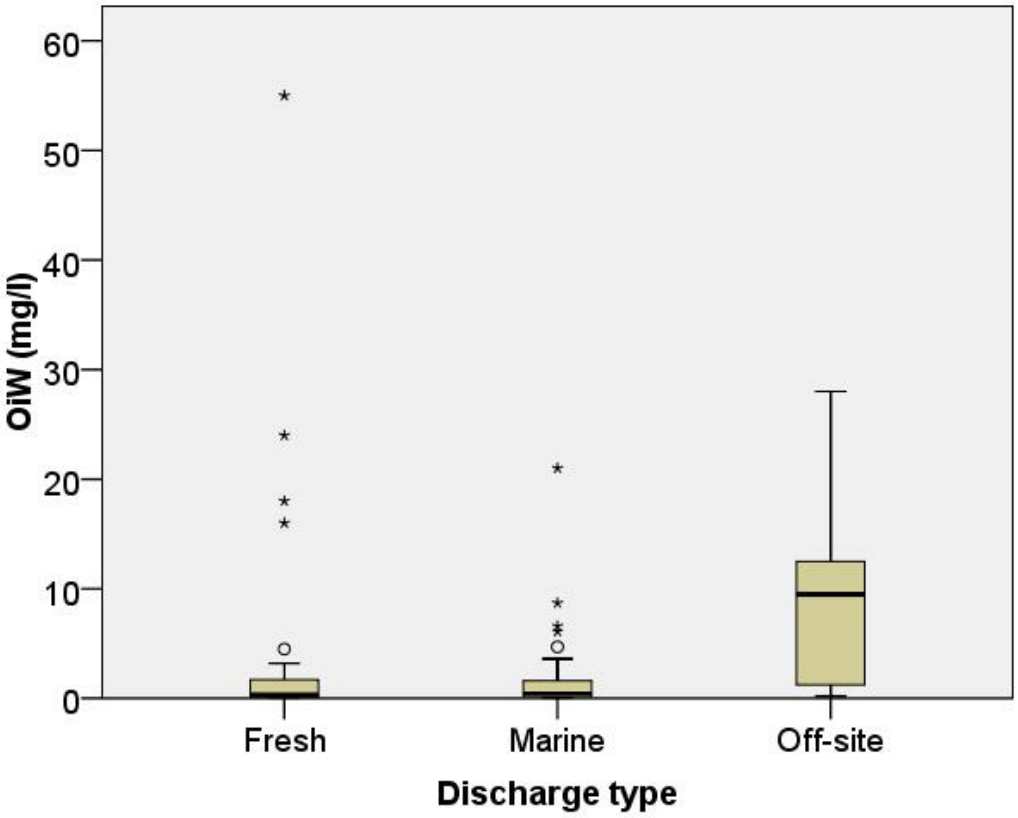
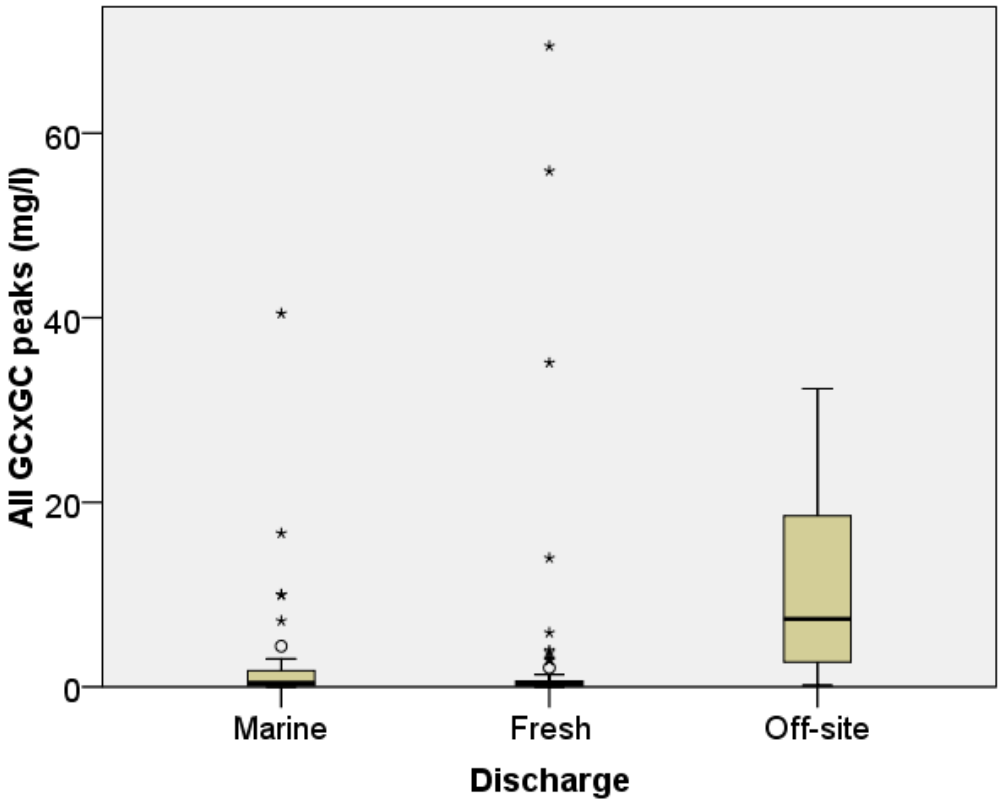


Figure 11 Box-Whisker plot of GCxGC levels in effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs



The levels on oil in water and concentrations of hydrocarbons quantified in all effluents using the HC block speciation method are shown in **Table 8**. In this table the results of the hydrocarbon block speciation have been presented in columns using the following labels and criteria:

1. "All GCxGC peaks" column. These data are based on concentrations using all peaks detected in the GCxGC chromatograms (excluding the solvent peak of the GC injection).
2. "All HC blocks" column. These data are based on GCxGC quantification of all HCs which can be ascribed to the HC blocks as described in the blocking scheme which has been previously presented in **Table 2** and are also referred to as priority HC blocks.
3. "All HC without C8/C9 HC blocks" column. The concentrations of all HC blocks as described in point 2 above excluding the C8 and C9 blocks.

The results have been classified on the basis of the type of environment to which the refinery discharges: freshwater discharge, marine discharge, and off-site discharge to WWTPs. The number of detects, limit of detection (LOD), minimum, maximum, average, median, 75 percentile, 25 percentile, and 90 percentile for the 3 discharge types are shown in **Table 8**. To test if the average concentrations between the discharges groups are different ($p<0.05$) data were statistically analysed with ANOVA and Tukey tests.

The concentration of all GCxGC peaks ranged between 0.015 and 69.4 mg/l. The concentration of all HC blocks ranged between 0.008 and 46 mg/l, and averages 57% of the concentration of all peaks detected with GCxGC. The concentration of the HC blocks without the C8/C9 HC blocks ranged from 35.0 to 0.007 mg/l. On the basis of the average and median values the highest concentrations of all peaks detected and all HC blocks are found in the off-site discharging effluents, which are significantly higher than the fresh and marine concentrations (**Table 8**).

The OiW concentrations positively correlated with the concentrations of all GCxGC peaks (**Figure 12**). The average concentration of the sum of all GCxGC peaks is 1.9 times higher than the OiW concentration. The concentrations of the priority HC blocks also positively correlated with the OiW concentrations (**Figure 13**). The average ratio of the concentrations of HC blocks/OiW is 1; note that the range of the ratio varied between 0.1 and 6. The difference in concentration between the OiW and full HC speciation GCxGC methods is probably due to the differences in analytical and quantification methods used for both approaches. For the full hydrocarbon speciation method all peaks were quantified, including C8 and C9 compounds and phenolic compounds, while in the OiW analysis only C10 to C40 HCs are quantified. Further, different clean-up methods (florisil vs. silica) and calibration standards are used for OiW and GCxGC methods respectively, a mixture of hydrocarbons, and 2,3-dimethylnaphthalene. To investigate the importance of the contribution of the C8 and C9 HCs from the GCxGC analysis the concentrations of all C8 and C9 compounds were deducted from the concentration of all HC blocks (**Figure 14**). The average ratio of HC blocks/OiW reduced to 0.9, but the correlation coefficient is similar (R^2=0.75) (**Figure 14**).

Table 8 Levels of OiW and levels of HCs quantified with the HC block speciation method using GCxGC in 111 effluents

Refinery code	OiW (mg/l)	All GCxGC peaks (mg/l)	All HC blocks (mg/l)	All HC without C8/C9 HCs blocks (mg/l)
Freshwater discharges				
Detects (55)	39	55	55	55
Max	55.0	69.4	45.7	35.0
Min	0.05	0.02	0.01	0.01
Average[1]	3.6[A]	3.9[A]	2.4[A]	2.1[AB]
Median	0.35	0.32	0.13	0.13
75percentile	1.7	0.64	0.53	0.52
25percentile	0.11	0.15	0.07	0.06
90percentile	6.8	3.87	2.69	2.27
Marine discharges				
Detects (45)				
Detects	38	45	45	45
Max	21.0	40.5	22.4	20.1
Min	0.050	0.015	0.008	0.007
Average[1]	1.84[A]	2.55[A]	1.45[A]	1.38[A]
Median	0.46	0.42	0.19	0.18
75percentile	1.53	1.76	1.02	1.01
25percentile	0.18	0.16	0.07	0.07
90percentile	5.1	6.1	3.9	3.9

Refinery code	OiW (mg/l)	All GCxGC peaks (mg/l)	All HC blocks (mg/l)	All HC without C8/C9 HCs blocks (mg/l)
Off-site discharges				
Detects (11)	11	11	11	11
Max	28.0	32.3	22.5	12.9
Min	0.19	0.15	0.08	0.08
Average[1]	9.6 [B]	11.3 [B]	8.0 [B]	5.7 [B]
Median	9.5	7.4	5.6	5.3
75percentile	12.5	18.5	12.6	9.4
25percentile	1.24	2.70	2.03	1.76
90percentile	22.5	26.5	18.4	11.7

[1]Average concentrations with different letters are significantly different from the other discharge type.

Figure 12 Concentrations of all GCxGC peaks vs. the concentration of OiW. The black line is the regression line based on the samples. The blue line has a regression coefficient of 1.

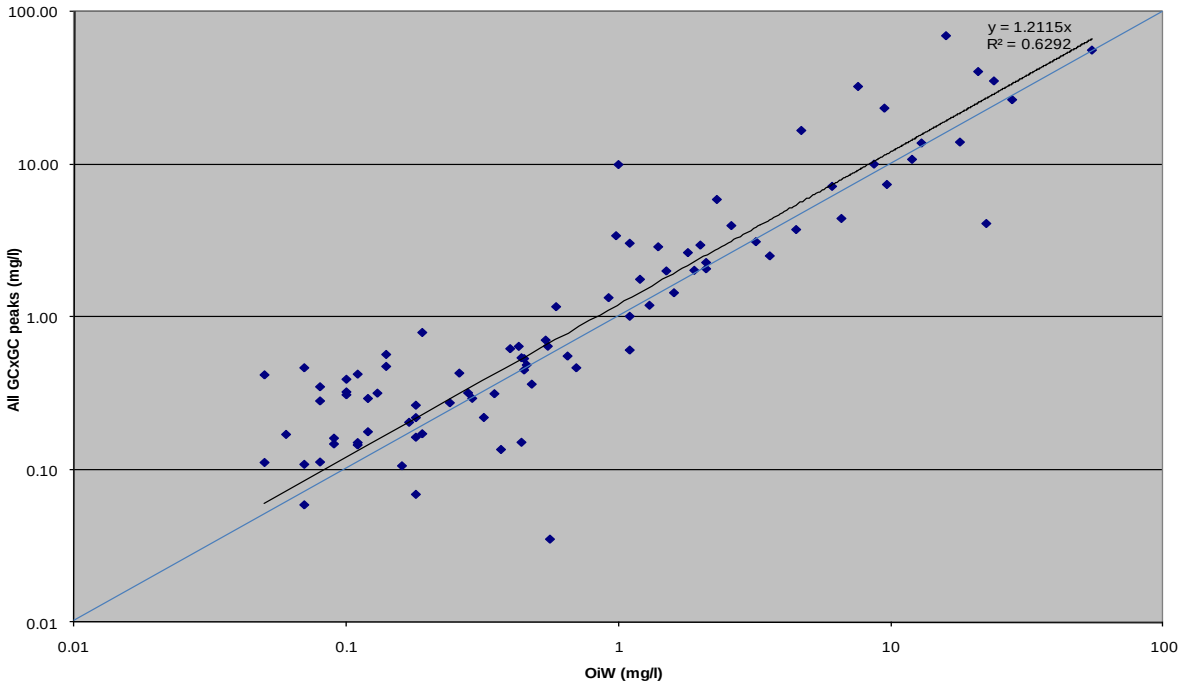


Figure 13 Concentrations of all HC blocks determined by GCxGC vs. OiW concentrations. The black line is the regression line based on the samples. The blue line has a regression coefficient of 1.

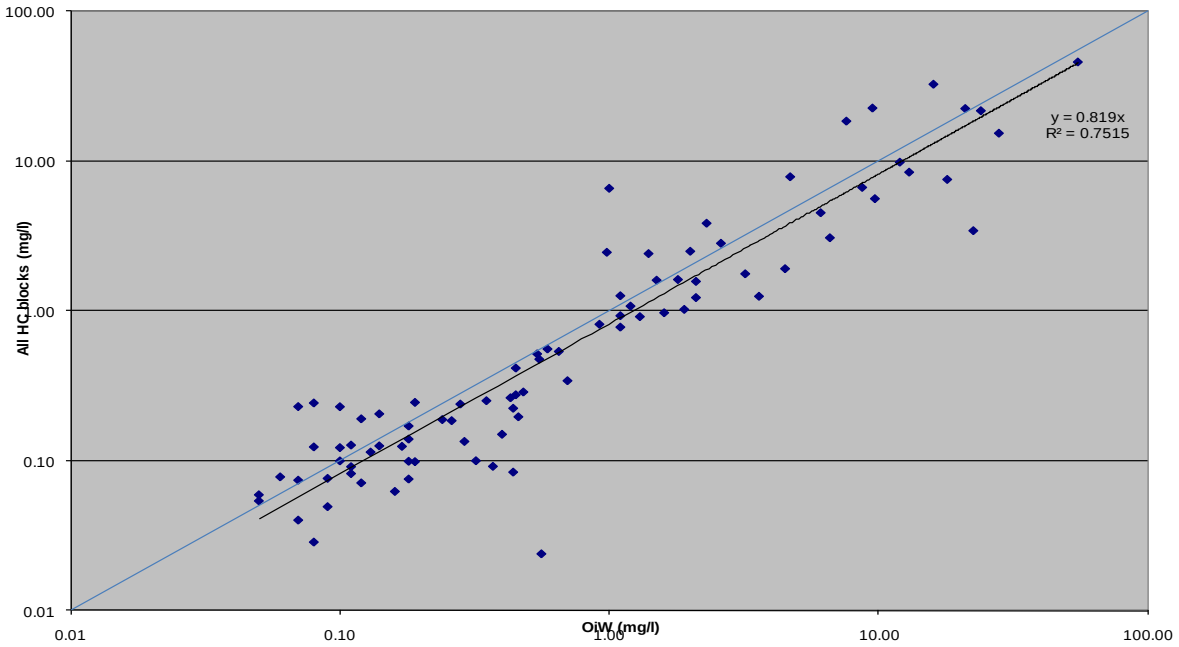
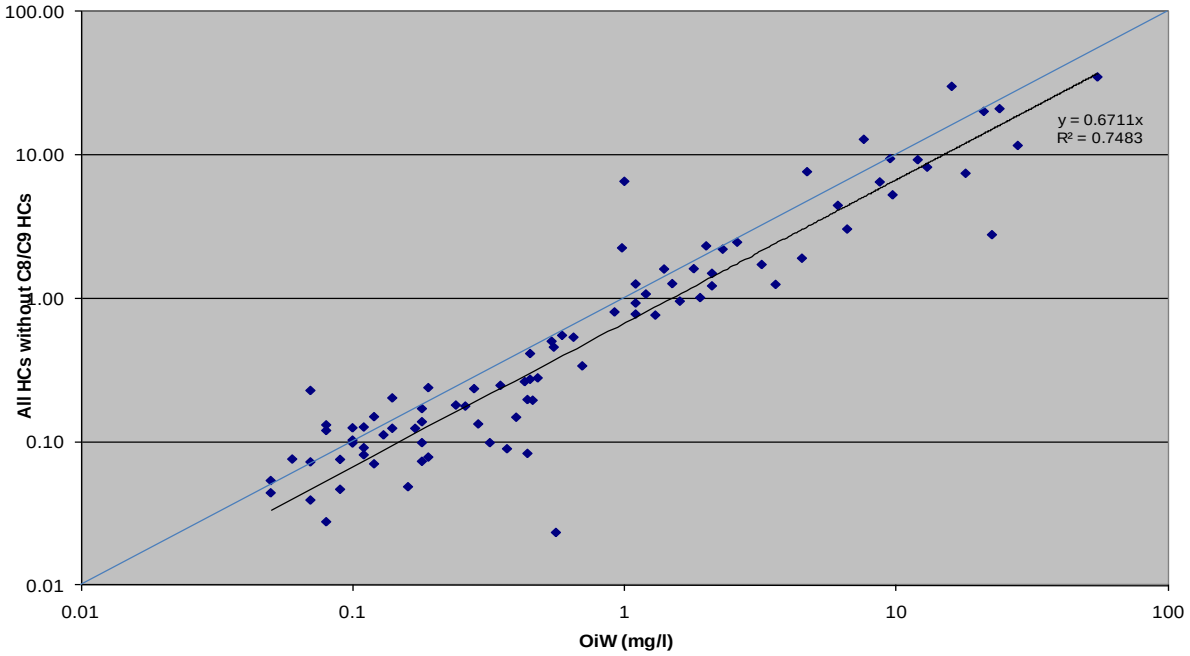


Figure 14 Concentrations of all hydrocarbons without C8/C9 determined by GCxGC vs. OiW concentrations. The black line is the regression line based on the samples. The blue line has a regression coefficient of 1.



3.4.1.2. Speciated Hydrocarbon Blocks as determined by GCxGC

The summary data from the HC blocks are shown in **Tables 9a-c**, where the mean concentrations for the blocks in the effluents are detailed. The overall summary (based on median concentrations) of the hydrocarbon blocks is shown in **Figure 15**. In annexes 9-11 the overall parameters for the blocks, mean, median, min, max, 5% and 95%, and the first and third quartiles are all shown for each hydrocarbon block.

Table 9a Mean concentrations (µg/l) of hydrocarbons in effluents discharging to the freshwater environment

	normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenic mono aromatics	di aromatics	naphthenic di aromatics	Poly aromatics	n-CC5 mono naphthenics	n-CC6 mono naphthenics	poly naphthenics
C6 - C8					2.85E+02							
C9-C11	4.19E+01	1.21E+02	9.48E+01	3.54E+01	2.56E+02	7.87E+01	6.93E+01			8.62E+00	9.54E+00	
C12-C14	6.70E+01	1.37E+02	1.42E+02	9.16E+01	7.42E+01	6.75E+01	8.98E+01	8.97E+00	1.89E+01	1.38E+01	1.22E+01	
C15-17	4.74E+01	1.02E+02	1.17E+02	1.75E+01	3.28E+01	2.89E+01	1.53E+01	6.87E+00	2.69E+01	6.52E+00	6.52E+00	
C18-20	3.61E+01	7.21E+01	6.63E+01	2.13E+01	2.10E+01	7.24E+00			2.67E+01	3.89E+00	3.89E+00	2.09E+01
C21-23	2.97E+01	6.78E+01	3.89E+01							2.71E+00	2.97E+00	2.62E+01
C24-26	2.57E+01	5.46E+01	1.85E+01							1.75E+00	1.75E+00	2.19E+01
C27-C29	1.50E+01	3.09E+01	7.60E+00							1.35E+00	1.27E+00	3.88E+01
C30-C40	1.18E+01	3.56E+01								6.03E-01	6.03E-01	2.78E+00

Table 9b Mean concentrations (µg/l) of hydrocarbons in effluents discharging to the marine environment

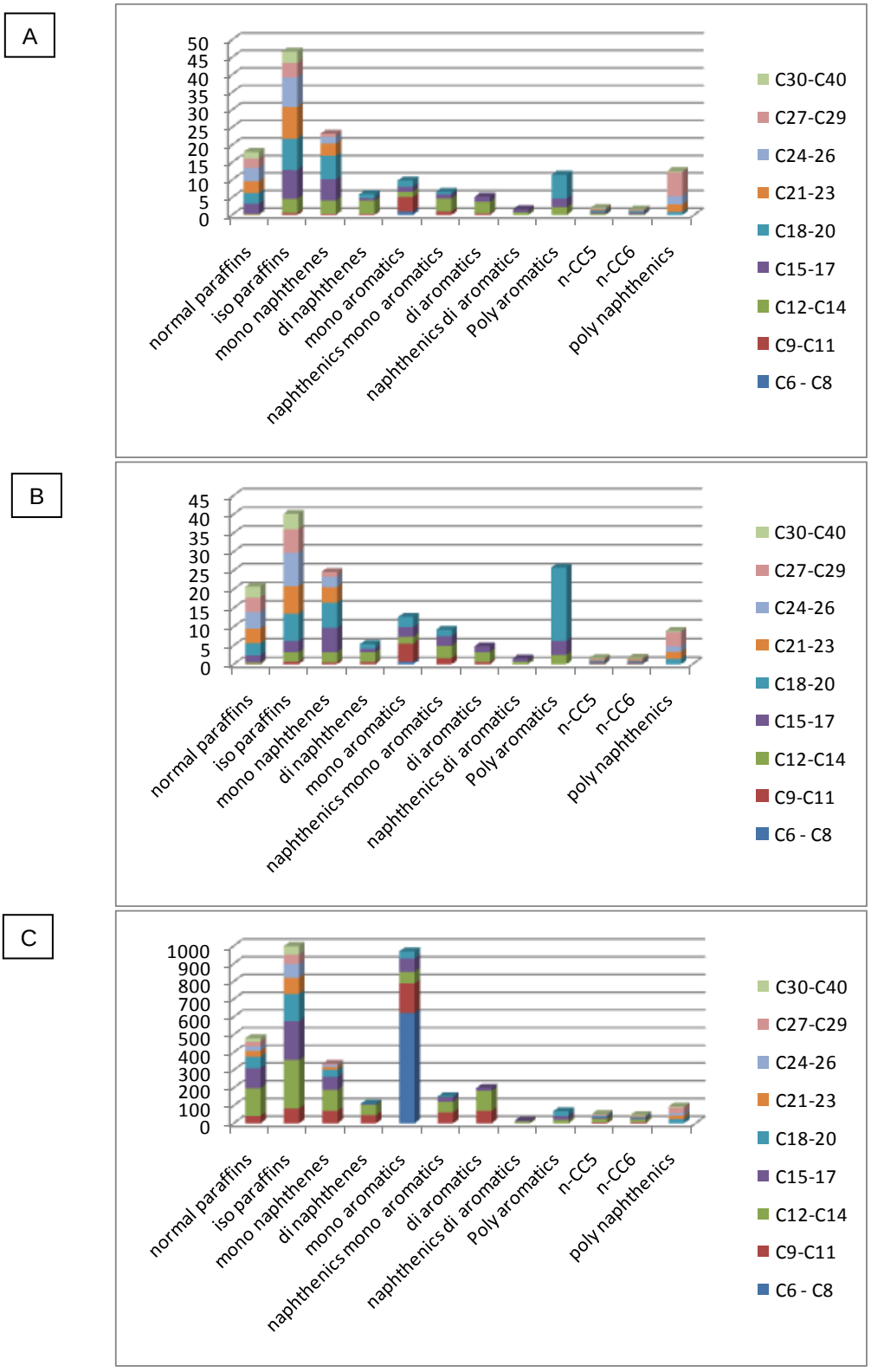
	normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenic mono aromatics	di aromatics	naphthenic di aromatics	Poly aromatics	n-CC5 mono naphthenics	n-CC6 mono naphthenics	poly naphthenics
C6 - C8					6.18E+01							
C9-C11	8.55E+00	2.24E+01	2.70E+01	1.34E+01	5.35E+01	1.73E+01	1.58E+01			1.52E+00	2.42E+00	
C12-C14	2.52E+01	4.46E+01	6.67E+01	6.22E+01	2.01E+01	3.17E+01	3.06E+01	7.61E+00	1.55E+01	7.11E+00	5.79E+00	
C15-17	4.41E+01	8.17E+01	6.39E+01	1.48E+01	3.95E+01	1.64E+01	1.58E+01	6.02E+00	1.84E+01	5.89E+00	5.89E+00	
C18-20	4.55E+01	1.11E+02	4.80E+01	1.69E+01	3.33E+01	1.62E+01			2.12E+01	5.37E+00	5.37E+00	2.11E+01
C21-23	3.51E+01	8.15E+01	2.50E+01							3.12E+00	3.31E+00	2.68E+01
C24-26	4.85E+01	6.47E+01	1.31E+01							2.52E+00	2.21E+00	2.40E+01
C27-C29	3.63E+01	4.08E+01	7.33E+00							2.48E+00	2.15E+00	6.27E+01
C30-C40	2.81E+01	4.00E+01								1.45E+00	1.45E+00	3.32E+00

Table 9c Mean concentrations (µg/l) of hydrocarbons in effluents discharging to off-site WWTPs

	normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenic mono aromatics	di aromatics	naphthenic di aromatics	Poly aromatics	n-CC5 mono naphthenics	n-CC6 mono naphthenics	poly naphthenics
C6 - C8					4.32E+03							
C9-C11	9.10E+01	1.76E+02	8.07E+01	8.48E+01	5.67E+02	1.43E+02	1.92E+02			1.28E+01	1.14E+01	
C12-C14	2.05E+02	2.92E+02	1.49E+02	1.08E+02	9.50E+01	1.03E+02	1.57E+02	1.20E+01	7.07E+01	2.92E+01	2.53E+01	
C15-17	1.79E+02	3.12E+02	1.31E+02	2.43E+01	1.02E+02	3.87E+01	3.06E+01	9.57E+00	5.54E+01	2.05E+01	2.05E+01	
C18-20	1.44E+02	3.00E+02	9.44E+01	1.05E+01	6.54E+01	6.24E+00			3.80E+01	1.43E+01	1.43E+01	4.39E+01
C21-23	9.97E+01	2.02E+02	6.59E+01							9.25E+00	8.44E+00	4.06E+01
C24-26	7.42E+01	1.43E+02	4.11E+01							6.39E+00	6.92E+00	2.95E+01
C27-C29	4.80E+01	8.44E+01	1.99E+01							5.36E+00	5.66E+00	8.89E+01
C30-C40	3.64E+01	8.59E+01								2.13E+00	2.13E+00	9.44E+00

The HC block speciation data showed differences in HC patterns between the three types of discharges (**Figure 15**). The data presented are the median carbon chain length and the different classes of hydrocarbons. However, interpretation of these data is outside the scope of this study and will be addressed by CONCAWE at a later stage.

Figure 15 Median concentrations (µg/l) of hydrocarbon blocks in effluents from freshwater (A), marine (B) and off-site discharging (C) refineries. Indicated are the carbon chain length and the different classes of hydrocarbons.



3.4.2. Volatile organic compounds

Tables 10 and **11** show the data for volatile organics both hydrocarbons (**Table 10**) and chlorinated aliphatic and aromatic compounds (**Table 11**). The number of detects, limit of detection (LOD), minimum, maximum, average, median, 75 percentile, 25 percentile, and 90 percentile are shown. To test if the average concentrations between the discharges groups are different ($p<0.05$) data were tested with ANOVA and Tukey tests.

BTEX (Benzene, toluene, ethylbenzene, xylenes), naphthalene, dichloromethane, and trichloromethane, were the most frequently found VOCs in refinery effluents, and less frequently 1,2-dichloroethane, 1,2-dichloroethene, dichloropropane, trichloroethene, tetrachloroethene and tetrachloromethane were observed (**Tables 10** and **11**, **Figure 16**). Benzene, toluene, ethylbenzene, xylenes, naphthalene, and dichloromethane were the most frequently found VOCs in effluents from the off-site discharging refineries (90%, 90%, 81%, 100%, 100%, 81% respectively). Of these compounds, xylenes had the highest median levels of 20, 7.0, and 230 µg/l in freshwater, marine or off-site discharging refineries, respectively (**Table 10**). The average levels of benzene, toluene, and xylenes were significantly higher in off-site discharging refineries than in directly discharging refineries to the environment (**Table 10**). No significant differences in average concentrations of BTEX and naphthalene between freshwater and marine discharging effluents were found.

Table 10 Levels of volatile organic compounds in 111 effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs

	Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Freshwater discharges						
Detects (55)	27	23	16	29	33	17
LOD	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Max	2700	4400	790	2800	10690	690
Min	0.20	0.20	0.40	0.20	0.00	0.70
Average[1]	156 [A]	225 [A]	54 [A]	163 [A]	272 [A]	89 [A]
Median	2.7	5.3	3.2	20	0.50	4.3
75percentile	58	49	10.2	41	28	7.9
25percentile	0.55	1.6	1.8	0.80	0.00	2.40
90percentile	232	158	16	182	303	320
Marine discharges						
Detects (45)	22	23	12	23	45	30
LOD	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Max	630	650	210	360	1850	68
Min	0.20	0.20	0.20	0.20	0.00	0.20
Average[1]	41 [A]	36 [A]	21 [A]	32 [A]	59 [A]	9 [A]
Median	2.1	1.4	0.9	7.0	0.50	1.3
75percentile	8.1	5.7	2.3	18	13	3.7
25percentile	0.40	0.50	0.50	0.73	0.00	0.38
90percentile	14	18	8.0	45	48	27
Off-site discharges						
Detects (11)	10	10	9	11	11	10
LOD	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Max	17000	5600	4500	2600	25800	1400
Min	26.0	10.0	1.9	0.9	0.9	0.5
Average[1]	2787 [B]	1187 [B]	629 [A]	812 [B]	4892 [B]	245 [A]
Median	130	320	44	230	683	120
75percentile	380	1800	150	1620	3218	180
25percentile	73	160	21	59	290	19
90percentile	9000	2800	1560	2240	16530	528

[1]Average concentrations with different letters are significantly different from the other discharge type.

Table 11 Levels of chloro-aliphatic and -aromatic compounds in 111 effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs

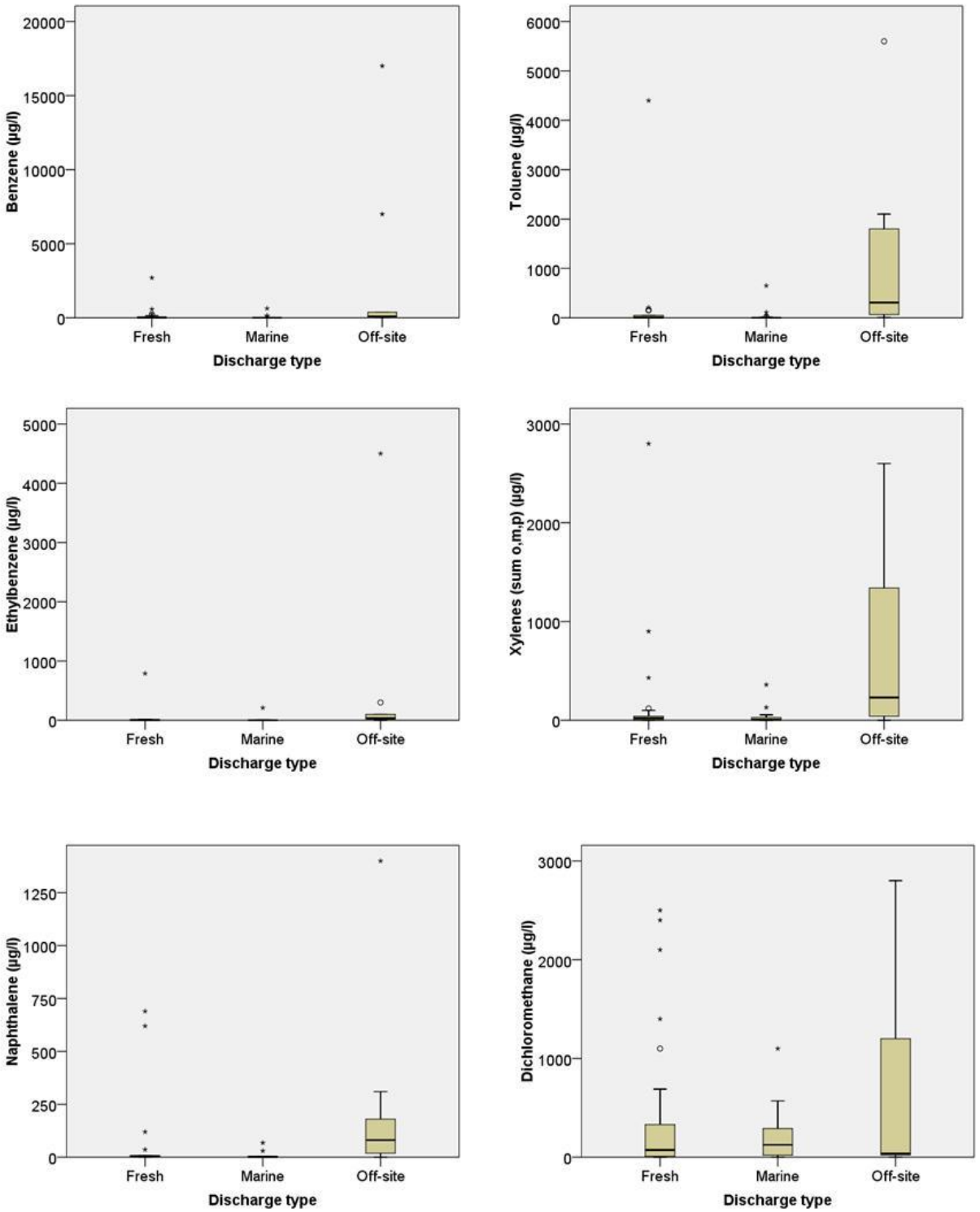
	Dichloro-methane[2]	1,2-dichloro-ethane	1,2-dichloro-ethene (cis)	Trichloro-methane	Trichloro-ethene	Tetrachloro-ethene
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
Freshwater discharges						
Detects (55)	42	7	4	19	3	6
LOD	<1 - <50	<0.5 - <25	<0.5 - <25	<0.1	<0.2 - <10	<0.2 - <10
Max	2500	270	42	5.90	30	40
Min	1.1	0.50	1.80	0.10	0.20	0.10
Average[1]	351 [A]	41	22	0.93 [A]	15	8.34
Median	78	1.60	22	0.35	15	0.50
75percentile	330	6.00	32	0.80	23	0.70
25percentile	9	1.00	12	0.20	7.65	0.40
90percentile	1100	113	38	1.93	27	24
Marine discharges						
Detects (45)	38	1	0	16	1	4
LOD	<1 - <100	<0.5 - <50	<0.5 - <50	<0.1 - <1	<0.2 - <20	<0.2 - <20
Max	1100	3.20	0.00	5.30	0.20	5.30
Min	1.8	3.20	0.00	0.20	0.20	0.10
Average[1]	195 [A]	3.20		1.92 [A]	0.20	1.95
Median	105	3.20		1.70	0.20	1.20
75percentile	290	3.20		3.08	0.20	2.38
25percentile	20	3.20		0.40	0.20	0.78
90percentile	490	3.20		4.45	0.20	4.13
Off-site discharges						
Detects (11)	9	3	0	2	2	3
LOD	<1 - <50	<0.5 - <50	<0.5 - <50	<0.1 - <10	<0.2 - <20	<0.2 - <20
Max	2800	150	0.00	2.50	1.20	1.60
Min	1.60	0.80	0.00	1.30	0.10	0.20
Average[1]	680 [A]	61		1.90 [A]	0.65	0.70
Median	104	32		1.90	0.65	0.30
75percentile	1200	91		2.20	0.93	0.95
25percentile	23	16		1.60	0.38	0.25
90percentile	1680	126		2.38	1.09	1.34

- the following have no detects: 1,1 dichloroethane, 1,2-dichloroethene (trans), 1,1,1-trichloroethane, 1,1,2-trichloroethane, monochlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene
- 1,2-dichloropropane only one detect: 4.2 ug/l
- tetrachloromethane only one detect: 1.2 ug/l

[1)] Average concentrations with different letters are significantly different from the other discharge type.

[2)] The results of the DCM analysis should be used with caution, as the comments received from the involved refineries after comparing these with their routine DCM monitoring reveal that in several cases DCM is reported for locations where daily sampling and analyses do not indicate the presence of DCM.

Figure 16 Box-Whisker plot of benzene, toluene, ethylbenzene, xylene, naphthalene and dichloromethane in effluents of refineries that discharge to freshwater, marine waters, and discharge off-site to WWTPs



3.4.3. Metals

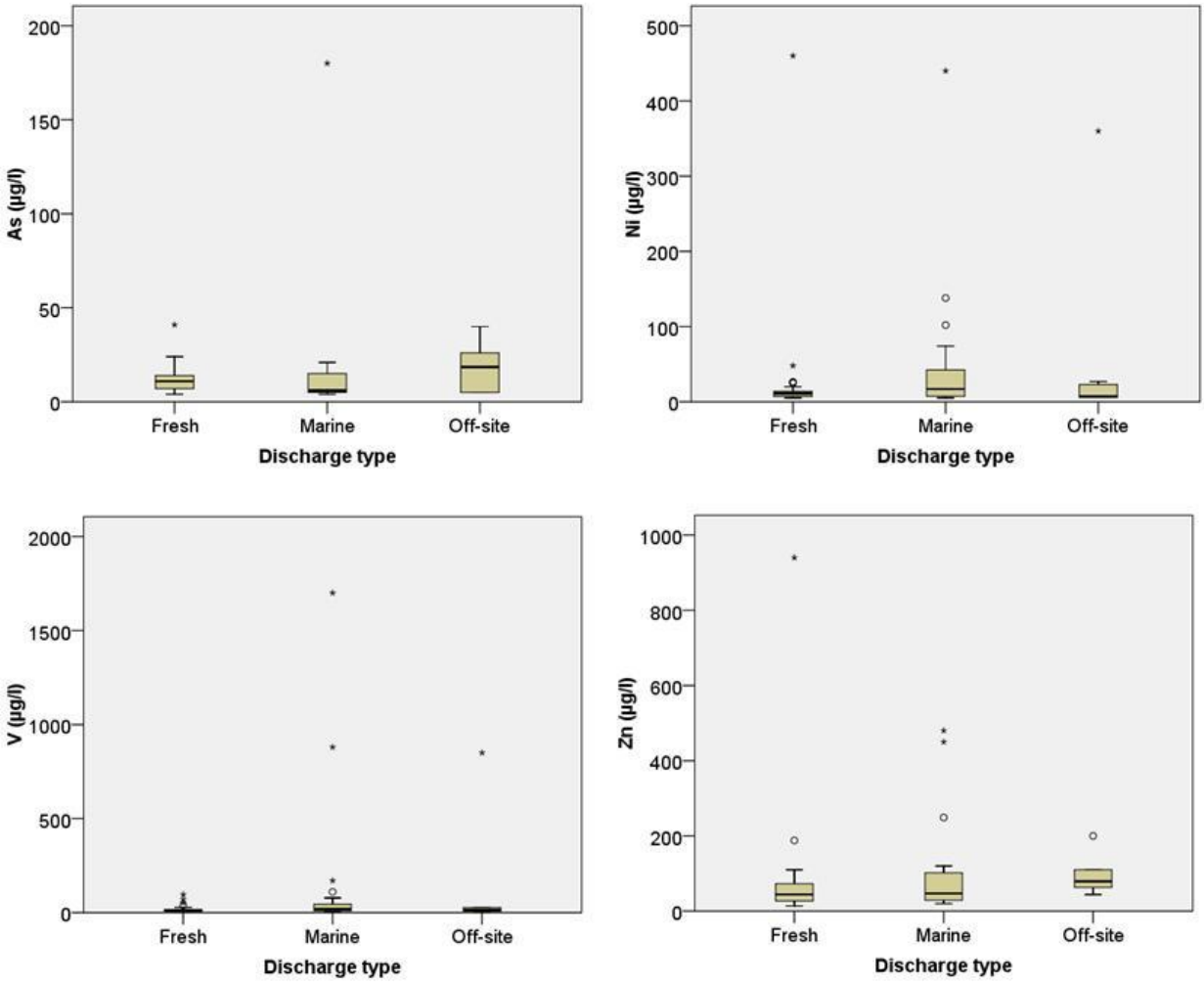
Table 12 details the data for the metals in 111 effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs. The number of detects, limit of detection (LOD), minimum, maximum, average, median, 75 percentile, 25 percentile, and 90 percentile are shown. To test if the average concentrations between the discharges groups are different ($p<0.05$) data were tested with ANOVA and Tukey tests. Arsenic, nickel, vanadium and zinc were the metals that were most frequently found in the effluents (**Table 12**, **Figure 17**). No significant differences in average concentrations between the discharge types were found. The highest concentrations were found for vanadium ranging from 3 to 1700 µg/l, followed by zinc and nickel ranging from 14-940 µg/l and 5-460 µg/l, respectively.

Table 12 Levels of metals in 111 effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs

	As µg/l	Cd µg/l	Cr µg/l	Co µg/l	Cu µg/l	Hg µg/l	Pb µg/l	Ni µg/l	V µg/l	Zn µg/l
Freshwater discharges										
Detects (55)	27	2	6	9	4	10	1	33	33	22
LOD	<4	<1	<5	<2	<5	<0.1	<5	<5	<5	<20
Max	41	40	44	64	20	0.7	12	460	96	940
Min	4.0	1.6	6.0	2.0	6.0	0.0	12	5.0	3.0	14
Average[1]	12 [A]	21	17	10	11	0.2	12	26 [A]	17 [A]	99 [A]
Median	11	21	11	3.0	9.0	0.1	12	11	9.0	45
75percentile	14	30	23	4.0	13	0.2	12	14	16	73
25percentile	7.0	11	6.0	3.0	6.8	0.1	12	7.0	7.0	27
90percentile	20	36	35	20	17	0.5	12	26	35	110
Marine discharges										
Detects (45)	23	0	4	6	12	11	1	28	37	20
LOD	<4	<1	<5	<2	<5	<0.1	<5	<5	<5	<20
Max	180		7.0	6.0	39	1.7	7.0	440	1700	480
Min	4.0		5.0	2.0	5.0	0.04	7.0	5.0	5.0	20
Average[1]	17 [A]		6.0	3.7	17	0.49	7.0	45 [A]	107 [A]	103 [A]
Median	6.0		6.0	3.5	18	0.08	7.0	17	16	47
75percentile	13.0		6.3	5.0	22	0.74	7.0	43	45	102
25percentile	5.0		5.8	2.0	6.0	0.06	7.0	7.5	9.0	29
90percentile	18.0		6.7	5.5	33	1.5	7.0	85	104	249
Off-site discharges										
Detects (11)	8	0	1	1	4	6	3	8	8	6
LOD	<4	<1	<5	<2	<5	<0.1	<5	<5	<5	<20
Max	40.0		8.0	2.0	8.0	9.7	15	360	850	200
Min	5.0		8.0	2.0	5.0	0.1	6.0	6.0	6.0	44
Average[1]	18 [A]		8.0		6.8	2.1	9.7	62 [A]	135 [A]	93 [A]
Median	18.5		8.0		7.0	0.2	8.0	7.0	18	67
75percentile	26.0		8.0		7.3	0.3	12	23.0	27	91
25percentile	5.0		8.0		6.5	0.1	7.0	6.5	9.0	63
90percentile	30.2		8.0		7.7	5.9	14	160	356	156

[1]Average concentrations with different letters are significantly different from the other discharge type.

Figure 17 Box-Whisker plots of As, Ni, Zn and V levels in effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs



3.4.4. Other inorganics

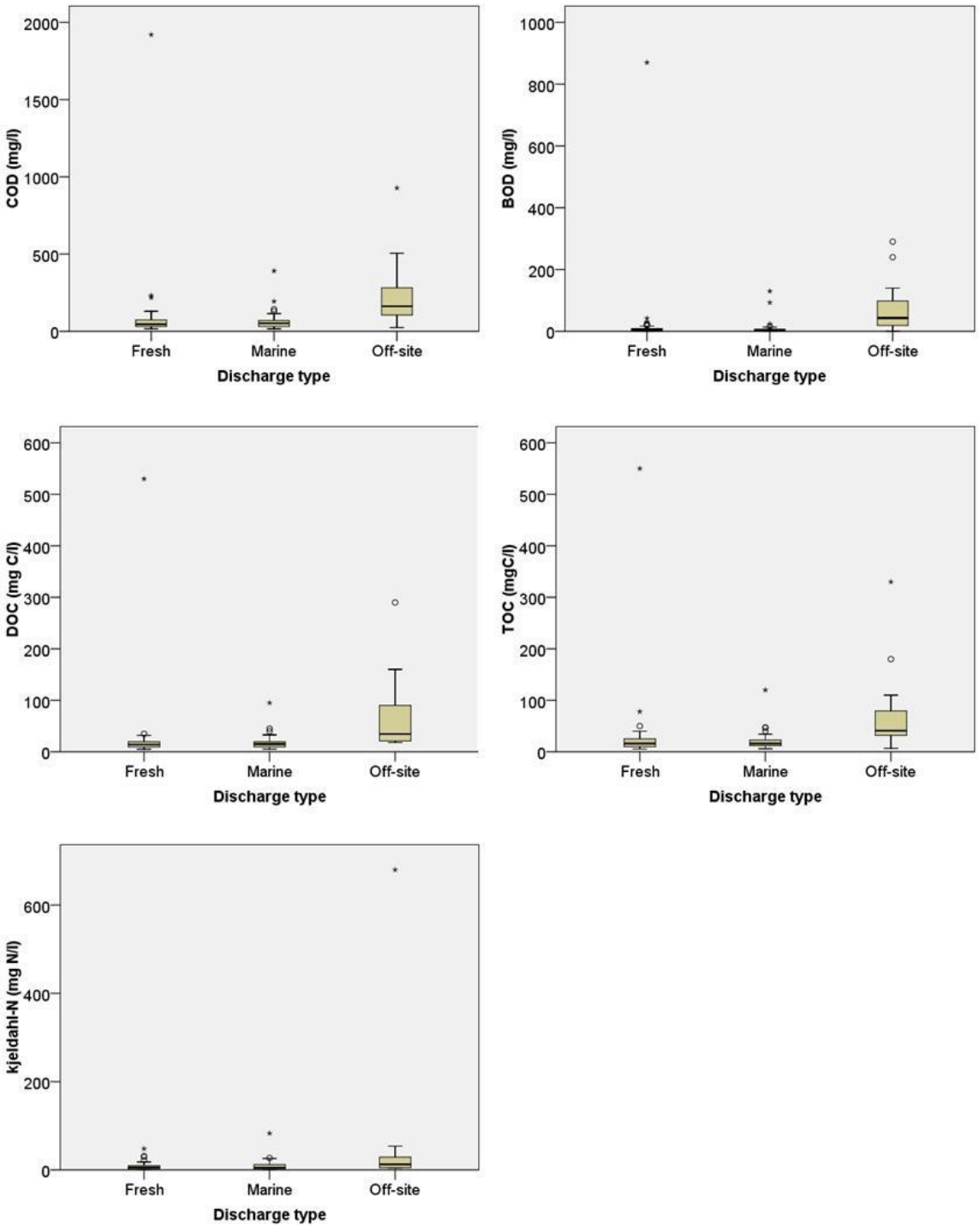
Table 13 shows the data obtained for other inorganics, including Kjeldahl-N, BOD, DOC, TOC and COD in the 111 effluents. The number of detects, limit of detection (LOD), minimum, maximum, average, median, 75 percentile, 25 percentile, and 90 percentile are shown. To test if the average concentrations between the discharges groups are different ($p<0.05$) data were tested with ANOVA and Tukey tests. The average concentrations of Kjeldahl-N, DOC, TOC and COD were significantly higher in off-site discharging effluents than in freshwater and marine discharging effluents (**Table 13**, **Figure 18**). BOD concentrations in off-site discharges were not significantly different from the marine discharges.

Table 13 Levels of Kjeldahl-N, BOD, DOC, TOC and COD in 111 effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs

	Kjeldahl-N mg N/l	**BOD** mg/l	**DOC** mg C/l	**TOC** mg C/l	**COD** mg/l
Freshwater discharges					
Detects (55)	51	49	56	54	51
LOD	<1	<3	<5	<5	<10
Max	48	870	530	550	1920
Min	1.0	1.0	5.1	5.4	17
Average[1]	8.0[A]	25[AB]	25[A]	29[A]	94[A]
Median	5.6	4.0	14	16	46
75percentile	9.5	9.0	19	25	74
25percentile	2.1	3.0	9.5	10	31
90percentile	17	20	29	33	98
Marine discharges					
Detects (45)	34	38	40	41	43
LOD	<1	<3	<5	<5	<10
Max	83	130	95	120	391
Min	1.0	1.0	5.2	5.9	16
Average[1]	9.8[A]	11[A]	18[A]	21[A]	65[A]
Median	5.3	4.0	15	16	52
75percentile	12	7.0	19	23	70
25percentile	2.0	2.0	9.7	12	31
90percentile	22	15	29	34	112
Off-site discharges					
Detects (11)	10	11	10	11	11
LOD	<1	<3	<5	<5	<10
Max	54	240	160	180	505
Min	4.2	1.0	18	6.90	24
Average[1]	17[B]	60[B]	50[B]	56[B]	187[B]
Median	11	34	32	41	155
75percentile	21	56	44	49	213
25percentile	4.9	19	21	32	92
90percentile	34	150	104	117	363

[1]Average concentrations with different letters are significantly different from the other discharge type.

Figure 18 Box-Whisker plots of Kjeldahl-N, BOD, DOC, TOC and COD levels in effluents of refineries that discharge to freshwater, marine waters, and off-site discharge to WWTPs



4. SUMMARY

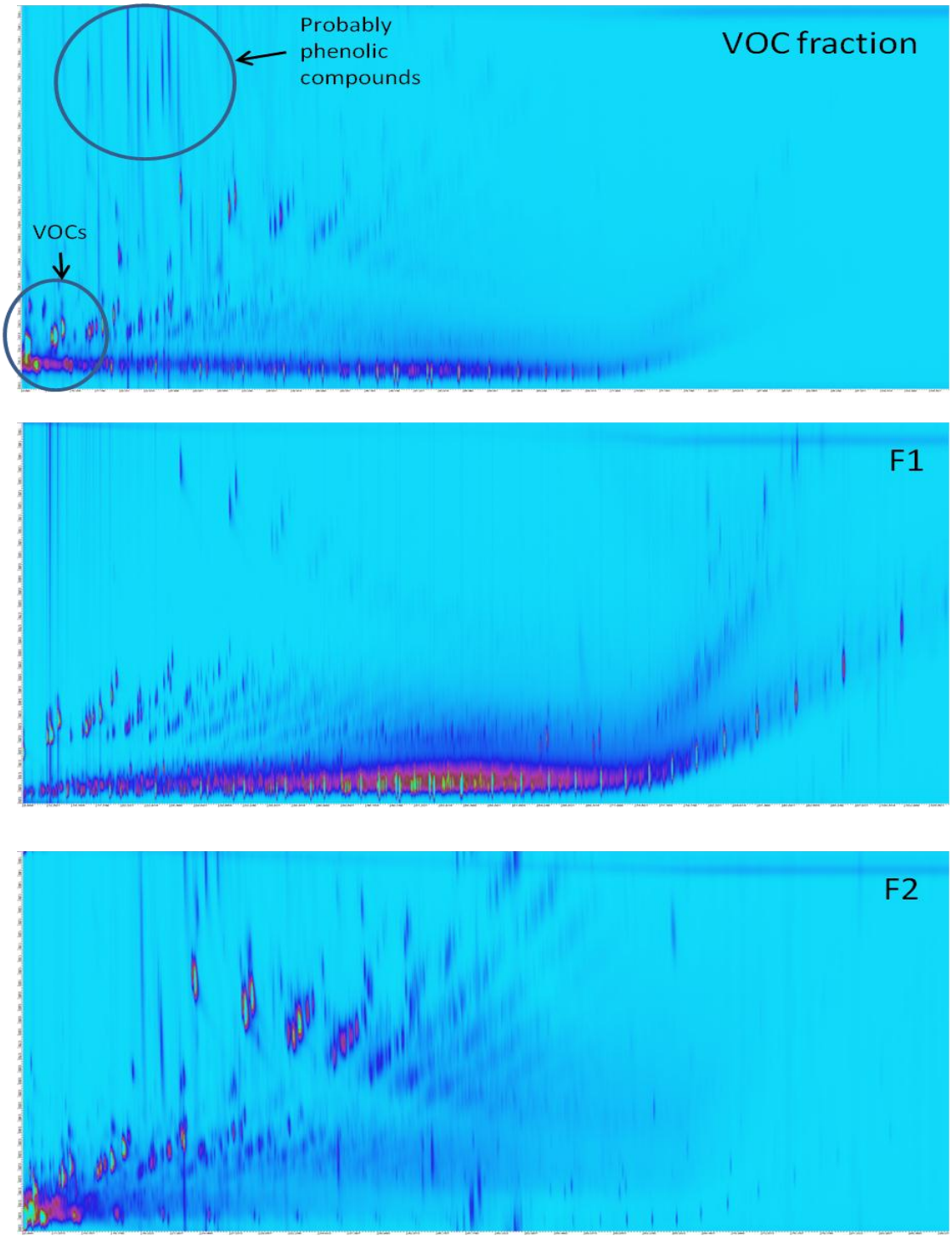
4.1. ANALYTICAL LIMITATIONS AND IMPROVEMENTS

The analytical method for the HC block speciation analysis was developed and validated for quantification of C9 and higher hydrocarbons. More volatile compounds (BTEX) were analysed separately. The BTEX results showed that the off-site discharging refineries contain relative high concentrations of BTEX compounds. However, other volatile compounds are not taken into consideration, such as phenol, cresols, and their derivatives. GCxGC analysis of the VOC HC speciation fraction showed that some effluents contain relative high concentrations of the volatile compounds (see **Figure 19**). Quantification of volatile compounds were partly taken into consideration when all peaks in the GCxGC chromatogram were quantified, although the concentrations are underestimated due to the partial loss of these compounds during sample preparation. In further effluent studies, the analysis and identification of volatile compounds in addition to BTEX could be taken into consideration.

The limit of detection for the speciation of the HC blocks was fit for purpose, and relatively sensitive compared to the OiW analysis, due to the high amount of sample intake (10 l). However, the drawback of a sensitive method is that the limit of detection for effluents with high concentrations of HCs (above 1 mg/l) was increased, mainly due to the fact that these samples had to be diluted before analysis, otherwise the second dimension GC column was overloaded.

Quantification of the HC blocks of poly-naphthenicss was partly hampered by the identification of the peaks in the poly-naphthenics GCxGC region, which resulted in semi-quantitative results. As the median concentrations of these compounds contribute 6% and 8% of all PetroRisk HC blocks in marine and freshwater effluents respectively, identification of the peaks would be useful to further improve the quantification of these compounds. Limited analytical information on the separation of poly-naphthenicss (e.g. steranes, triterpanes, and triaromatic steranes) is available [18], and the available commercial standards are expensive. Limited information on the occurrence of these compounds in crude oil, refinery products as effluents is available.

Figure 19 GCxGC chromatograms of an effluent extract (refinery 11.01) of the VOC fraction (before evaporation and silica fractionation), and after silica fractionation in a first (F1) and a second fraction (F2) according to the scheme of Fig. 3. The contour plot shows the retention time of the compounds on the first GC column (*x-axis*), and the retention time on the second GC column (y-axis). Each spot in the contour plot represents a compound and the colour is an indication of the amount, red being the higher concentration.



4.2. SUMMARY OF DATA OBTAINED

The data demonstrate that the method can be applied to refinery effluents and will be useful in any further research on the fate and effects of those hydrocarbon blocks, as originally envisaged in the project development.

Oil in water (OiW) was observed in all effluents discharging to off-site effluents and in 70% and 84% of the fresh and marine water discharging effluents, respectively. The data indicated that refinery effluents which were discharged to fresh and marine waters had average concentrations that were not significantly different.

Hydrocarbon peaks were detected and quantified in all effluents and again the effluents discharged to freshwater and marine environments were found not to be significantly different, whether based on all the GCxGC peaks observed (excluding the solvent peak) or only those covered by the HC blocks.

The OiW concentrations positively correlated with the concentrations of all GCxGC peaks (**Figure 12**). While the average concentration of the sum of all GCxGC peaks was 1.9 times higher than the OiW concentration that based on the HC blocks was 1 (with a range of 0.1 to 6). The difference in concentration between the OiW and full HC speciation GCxGC methods is probably due to the differences in analytical and quantification methods used for both approaches.

Benzene, toluene, ethylbenzene, xylenes, naphthalene, dichloromethane, and trichloromethane, were the most frequently found VOCs in refinery effluents, and less frequently 1,2-dichloroethane, 1,2-dichloroethene, dichloropropane, trichloroethene, tetrachloroethene and tetrachloromethane were observed (**Tables 10** and **11**, **Figure 16**). Benzene, toluene, ethylbenzene, xylenes, naphthalene, and dichloromethane were the most frequently found VOCs in effluents from the off-site discharging refineries (90%, 90%, 81%, 100%, 100%, 81% respectively). The average levels of benzene, toluene, and xylenes were significantly higher in off-site discharging refineries than in those discharging to the aquatic environment via a site WWTP (**Table 10**). No significant differences in average concentrations of BTEX and naphthalene between effluents discharging to freshwater and marine environments were found.

Of the metals determined arsenic, nickel, vanadium and zinc were most frequently found in the effluents (**Table 12**, **Figure 17**). Regardless of the type of treatment and off-site discharge environment, no significant differences in average concentrations were found. The highest concentrations were found for vanadium ranging from 3 to 1700 µg/l, followed by zinc and nickel ranging from 14-940 µg/l and 5-460 µg/l, respectively.

For other inorganics, including Kjeldahl-N, BOD, DOC, TOC and COD in the 111 effluents the average concentrations of Kjeldahl-N, DOC, TOC and COD were significantly higher in off-site discharging effluents than in effluents discharging to freshwater and marine environments (**Table 13**). BOD concentrations in off-site discharges were not significantly different from the marine discharges.

4.3. OVERALL SUMMARY

The project demonstrated the successful transfer of the GCxGC Shell method for product characterisation to a contract laboratory. The contract laboratory then demonstrated that the method could be applied to effluents discharged from refineries and that hydrocarbon blocks, as specified by CONCAWE, could be identified and quantified. With the successful demonstration of this feasibility study the method, plus other analytical approaches were applied to effluents in the programme described. Thus 111 effluents from 105 refineries across Europe were analysed. The purpose of this report is to report the findings and further interpretation will be conducted by CONCAWE and reported at a later date. It is likely that these further interpretations will address issues arising from the risk assessments of petroleum products undertaken for REACH and also for other effluent related programmes including the WFD and IPPC.

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6. GLOSSARY

BFR	Brominated Flame Retardant	Brominated organic substances applied to reduce the flammability of articles.
BOD	Biological Oxygen Demand	A measure of the amount of oxygen consumed when the organic components of an effluent biodegrade under aerobic conditions.
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	Group of similar aromatic substances (C6-C8), the determination of which is usually required in refinery effluents.
CAS	Chemical Abstract Service	A division of the American Chemical Society, that provides information on chemicals and chemical literature and assigns the CAS substance identification numbers
COD	Chemical Oxygen Demand	A measure of the amount of oxygen consumed when the organic components are reacted with an oxidising agent and is usually greater than the BOD. It is a measure of the maximum potential for oxygen consumption.
CV	Column Volume	The column volume in chromatography (particularly liquid chromatography) that is made up of the individual volumes parts in solute retention.
DAF	Dissolved Air Flotation	A water treatment process that clarifies wastewaters (or other waters) by the removal of suspended matter such as oil or solids by aeration to force it to float to the surface where it then can be removed by a skimming device.
DCM	Di-Chloro-Methane	A chlorinated hydrocarbon solvent
DOC	Dissolved Organic Carbon	This is a measure of the dissolved organic matter in water, effluent sample.
EGOM	Extractable Gas Chromatographic Organic Material	The fraction of organic substances present in a sample that is quantifiable with a GC-analysis.
EGOM-LLE	Liquid-liquid extraction	Solvent extraction of effluents for their organic content, usually followed by GC determinations.
HCB	Hydrocarbon blocks	Approach to describe similar behaving hydrocarbon molecules within a complex petroleum product. Underlying principle approach for conducting environmental risk assessments of petroleum products.
FID	Flame Ionisation Detector	Type of gas detector used in Gas Chromatography.
GC	Gas Chromatography	Analytical method for determining the presence and quantities of substances by separating and analyzing compounds that can be vaporized without decomposition.
GC-MS	Gas Chromatography Mass Spectrometry	Analytical technique that uses a Mass Spectrometer to detect and identify the components of the sample under analysis.

HPLC	High Performance Liquid Chromatography	A chromatographic technique that can separate a mixture of compounds, and is used in biochemistry and analytical chemistry to identify, quantify and purify the individual components of the mixture.
IPPC	Integrated Pollution Prevention Control	EC, 1996 – Regulations to ensure that particular industries consider the environment as a whole, and the impacts of routine and accidental releases.
IQR	Interquartile Range	A measure of statistical dispersion, being equal to the difference between the third and first quartiles. IQR = $Q_3 - Q_1$
IVM	Instituut voor Millieustudies	Institute for Environmental Studies of the Free University of Amsterdam
KD	Kuderna Danish Technique	A method for concentrating samples by evaporation of solvents using a rotator evaporator equipped with a Kuderna Danish flask.
LOD	Limit of Detection	The output signal or concentration value above which it can be affirmed, with a stated level of confidence that a sample is different from a blank sample containing no determinant of interest. Often confused with the Limit of Quantitation (LoQ)
LOQ	`Limit of Quantitation	A stated multiple of the limit of detection at which the concentration of the determinant that can reasonably be determined with an acceptable level of accuracy and precision.
OiW	Oil in Water	The amount non-polar hydrocarbon substances in an effluent that originate from refinery or E&P activities.
OSPAR		Oslo, Paris Convention for the Protection of the Marine Environment of the North East Atlantic.
P	Persistence	An assessment of the time that it takes for a chemical to degrade in the environment. There is rarely 1 single value as degradation is dependent on the chemical and the environment. Usually refers to the ½ life of the primary degradation of the chemical.
PAH	Polycyclic Aromatic Hydrocarbons	
PBS	Potentially Bioaccumulative Substances	A measurement of organic substances, using a technique (SPME) which gives an indicative assessment of the quantity of the substances that might bioaccumulate in aquatic or terrestrial organisms.
PBT	Persistent, Bioaccumulative and Toxic	A hazard based approach to categorising chemicals. It is part of the assessment of chemical substances under REACH.
PEC	Predicted Environmental Concentration	The concentration of a substance (or group of chemicals as in the hydrocarbon blocks) predicted by modelling and knowledge of their release.

PETRORISK	CONCAWE's Petroleum Product Risk Assessment Model	An MS-EXCEL based spreadsheet programme developed by CONCAWE for the purpose of assessing the risks of petroleum substances as required under the REACH Regulation
PNEC	Predicted No Effect Concentration	The concentration of a substance (or group of chemicals as in the hydrocarbon blocks) predicted by information usually derived from ecotoxicity tests, below which effects are not expected in the environmental compartment being assessed.
QA/QC	Quality Assurance /Quality Control	Quality assurance, the process or set of processes used to measure and assure the quality of a product. Quality control, the process of meeting products and services to consumer expectations.
RBT	Ready (Style) Biodegradation Tests	Tests that are stringent in design, and attempt to screen out chemicals that will rapidly biodegrade in the environment.
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals	EU Regulation EC 1907/2006, covering all chemicals in commerce (excempting e.g. pharmaceuticals and pesticides) and requiring information on their (eco)toxicology, manufacturing, use and releases to the environment.
SPME	Solid Phase Micro-extraction	Fibers which allow for the extraction of chemicals which is related to hydrophobicity (which in turn is related to a chemical's potential to bioaccumulate), its bioavailability and analysis can be easily conducted by gas chromatography. Can be used to assess potential for toxicity and bioaccumulation.
T	Toxicity	A measure of the chemical's toxicity, usually expressed in units that are related to the concentration of the chemical, the test duration and the effects being measured, e.g. concentration causing 50% lethality after 96 h (96 h LC50).
TOC	Total Organic Carbon	The amount of carbon bound in an organic compound and is often used as a non-specific indicator of water quality.
VOC	Volatile organic chemicals	A description that part of the petroleum product, refinery stream which is very volatile and usually requires monitoring.
WEA	Whole Effluent Assessment	This approach covers assessing the toxicity of effluents and the persistence and potential for bioaccumulation of the effluent constituents.
WFD	Water Framework Directive	A recent EU initiative focussed on improving the ecological condition of receiving waters (EC 2000) and which stipulates that all waters must meet biological and chemical quality criteria by 2015.
WWTP	Waste Water Treatment Plant	Facility used to treat contaminated water before this is discharged into a receiving environment.

ANNEX 1 ABOUT THE AUTHORS

This project was supervised by a small team of people, who are the mentioned authors of this report. Below their names and affiliations are provided.

For questions, remarks and other comments the TC of CONCAWE is best contacted. His coordinates can be found on the CONCAWE website.

Pim Leonards, Consultant, Institute for Environmental Studies, VU University Amsterdam, Amsterdam, The Netherlands

Mike Comber, Consultant, Mike Comber Consulting, Brussels, Belgium

Stuart Forbes, Shell Health Services and Shell Global Solutions Thornton, Chester, UK

Graham Whale, Shell Health Services and Shell Global Solutions Thornton, Chester, UK

Klaas den Haan, Technical Coordinator Water, Soil & Waste, CONCAWE, Brussels, Belgium

ANNEX 2 BACKGROUND DOCUMENT SUPPLIED TO REFINERIES FOR EFFLUENT SAMPLE COLLECTION

Background

The Petroleum Product Risk Assessments being undertaken by CONCAWE have identified refinery/process effluents as an area where additional data is required. To address this and obtain the required information we are contacting all member company sites to obtain refinery /process effluent samples for analysis. CONCAWE has developed an analytical programme to speciate hydrocarbons in member company effluents to help support our knowledge of what refineries emit to the aquatic environment on a more detailed level. This analytical programme will start in June 2008 and aims to be completed by December 2008 for all member companies' sites.

The refinery/process effluents we are requesting should be the ones for which the oil in water is reported under previous CONCAWE refinery surveys. Consequently some sites will be receiving more than one set of sampling containers. Please ensure samples taken are for refinery/process effluent samples (i.e. associated with the parts of the sites where production of the products occurs and not simply storm water run-off).

This analysis is being conducted at CONCAWE's expense as part of the ongoing risk assessment process by an approved contractor who will provide the sample containers. The only requirement for the site is to arrange for these sample containers to be returned by a courier to the contractor. A protocol and sample information sheet describing how these samples should be obtained and information required are attached.

How will the information be used?

The reasons these samples are required is that, whilst conducting the petroleum product risk assessments—in support of your future REACH registration—CONCAWE have determined that some refineries may have environmental toxicity issues with their effluent discharges. These preliminary results are based on oil in water measurements provided to CONCAWE. This oil in water data is not sufficiently characterised to support the risk assessments which are related to the production of individual petroleum product groups (e.g. gasoline, kerosines, gas oils). CONCAWE requires better characterised effluent information to update the risk assessments and enable the results to be based on more appropriate data.

What are the implications for the site?

If we are unable to obtain a sample(s) from your site, then the risk assessments will utilize existing (default) information. This could cause problems because the default data may suggest that your effluent has the potential to cause an adverse effect on the aquatic/sediment environment. This would lead to problems with your registration under REACH. In the best case, you would be required to conduct additional effluent testing for specific substances or additional effluent treatment in order to rectify the situation. In the worst case, your registration will be rejected, the consequence of which is that continued operation of your refinery would be in breach of the law and subject to fines and penalties. In either case, this will put an additional cost burden on the site and impact production—and a potential loss of revenue! We strongly encourage you to send samples following the protocol to help us try to mitigate any potential problems.

Additional Data

The attached protocol provides an overview of the sampling procedure to be followed. It would be beneficial if you could provide any additional data on the quality of the effluent (e.g. routine measurements for oil in water, COD, BOD etc.) at or close to the time of sampling and provide details of the location and time of sampling.

In addition if you could provide a brief overview of the water treatment facilities (e.g. biological waste water treatment plant) prior to the sample collection point as this would allow us to cross check with data held by CONCAWE from previous surveys.

This additional information should be sent with the samples on the sample information sheet.

Confidentiality & Practicalities

As has been the case in refinery surveys, all analytical data generated will be confidential to the site supplying the sample and held as such within CONCAWE. External use of the data will only be in a non attributable or industry wide form.

Please return the full sample containers using the address provided at the latest 2 weeks after receipt. If for some reason the site does not wish to provide samples we kindly request that the containers are returned so these can be used for other sites. Your cooperation is appreciated as the information is critical for CONCAWE to complete the product risk assessments and help your sites with REACH registration—as well as future compliance with new EU and Member State environmental regulations.

We thank you in advance for your assistance and we are available to answer your questions.

Best Regards,

Graham Whale

Chairman, CONCAWE, Water Quality Management Group

Bo Dmytrasz

Technical Coordinator, CONCAWE, Risk Assessment Coordination Group

ANNEX 3 SAMPLE COLLECTION PROTOCOL FOR THE CONCAWE HC BLOCK SPECIATION PROJECT

2008 CONCAWE Refinery Speciation Project

Protocol for filling sample bottles

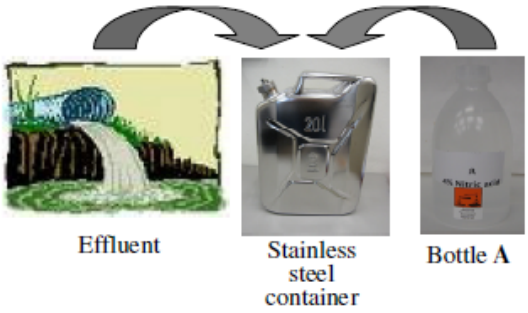
SAMPLE KIT
The sampling kit contains the following materials:

- 1 **stainless steel container** (20 liter)
- 1 plastic **bottle A** (500 ml 4% nitric acid)
- 1 plastic **bottle B** (1 liter)
- Gloves and safety glasses
- Material safety data sheet (MSDS), 4% nitric acid
- Sample information sheet

INSTRUCTIONS SAMPLING
Please, collect the effluent sample from the **usual sampling point** (i.e. the one where samples for oil in water analysis are collected). The sample should be a **fresh collected spot sample**.

1. **Stainless steel container and plastic bottle A:**
   First add the solution of **bottle A** (500 ml, 4% nitric acid) completely to the stainless steel container, then fill the stainless steel container **completely** with **effluent**, leaving NO HEADSPACE.

   Use the enclosed gloves and safety glasses for your safety. Discard empty bottle A, according to safety instructions. For safety instructions of solution A, see enclosed MSDS.



Effluent | Stainless steel container | Bottle A

2. **Plastic bottle B:**
   Fill bottle B completely with effluent. Secure cap firmly and do not expose sample to light or heat.


Effluent | Bottle **B**

3. **Sample information sheet:**
   Please, fill in the sample information sheet.

RETURNING FILLED SAMPLE BOTTLES
Return the following filled sample bottles without delay by courier:

1. Stainless steel container
2. Bottle B
3. Sample information sheet:

To:
Jacco Koekkoek
Institute for Environmental Studies
VU University Amsterdam
De Boelelaan 1087
1081 HV Amsterdam
THE NETHERLANDS
tel: +31 20 5989 539

Questions? Please contact any of the following:
Jacco Koekkoek or Pim Leonards at Tel. +31 20 5989 539 or +31 20 5989 509; Fax. +31 20 5989 553
emails:
jacco.koekkoek@ivm.vu.nl
stefan.van.leeuwen@ivm.vu.nl

Thank you for your help.

Best regards,

Dr. Pim Leonards

VU University Amsterdam
Institute for Environmental Studies
De Boelelaan 1087
1081 HV Amsterdam
THE NETHERLANDS
+31 20 5989 509

ANNEX 4 SAMPLING INFORMATION SHEET PROVIDED AT THE SAMPLING OF EFFLUENT

2008 CONCAWE Refinery Speciation Project

Sample information sheet

Refinery name:

Sample time and date:

Sample details (location, type of effluent):

Details of water treatment prior to sample location (e.g. biological treatment, DAF, interceptor etc.)

Will additional information be provided on routine water analysis undertaken by the refinery …Y/N?

Contact person:

Return form to:

Jacco Koekkoek
Institute for Environmental Studies
VU University Amsterdam
De Boelelaan 1087
1081 HV Amsterdam
THE NETHERLANDS
tel: +31 20 5989 539

ANNEX 5A RECOVERIES OF JET FUEL (NO. 6, JP-5) IN AN ALIPHATIC AND AROMATIC FRACTION USING SILICA (100% ACTIVATED, 7 G)

Replicates	Recovery Aliphatic fraction	Recovery Aromatic fraction	Total recovery after additional evaporation
#1	77	27	98
#2	76	26	93
#3	74	28	91
#4	74	28	94
#5	75	27	95
AVG	75	27	94
SD	1.5	0.8	2.7
RSD	1.9	2.8	2.8

ANNEX 5B RECOVERIES OF A MIXTURE OF ALIPHATIC AND AROMATIC HYDROCARBONS USING SILICA (100% ACTIVATED, 7 G)

Compound	**Fraction 1 (aliphatics)**			**Fraction 2 (aromatics)**		
	AVG	SD	CV (%)	AVG	SD	CV (%)
Trimethylcyclohexane	40	4.2	10	0		
Nonane	116	4.1	4	0		
cis-decahydronaphthalene	126	4.5	4	0		
trans-decahydronaphthalene	114	4.8	4	0		
Pristane	128	3.2	3	0		
Octadecane	154	9.8	6	0		
1,6-Dimethylnaphthalene	0			127	5.2	4
2,6-Dimethylnaphthalene	0			112	8.1	7
1,2-Dimethylnaphthalene	0			100	5.3	5
Anthracene	0			121	6.3	5
Pyrene	0			107	5.5	5
1-Methylphenanthrene	0			109	3.9	4
Retene	0			107	4.7	4
2-Methylphenanthrene	0			106	3.2	3
3-Methylphenanthrene	0			111	3.6	3
9-Methylphenanthrene	0			109	4.4	4
1,7-Dimethylphenanthrene	0			112	6.5	6
1-Methylpyrene	0			116	4.3	4
4-Methylpyrene	0			113	5.3	5
3-Methylchrysene	0			116	4.7	4
6-Methylchrysene	0			119	3.0	3

AVG: average
SD: standard deviation
CV: coefficient of variation

ANNEX 6 RECOVERIES OF A TEST MIXTURE OF HYDROCARBONS AFTER CONCENTRATION BY NITROGEN, KD, AND ROTARY EVAPORATION.

Compound	KD 67C		Nitrogen 30C		Nitrogen 50C	Rotary evaporation 30C, -720 mbar	
	AVG	SD	AVG	SD		AVG	SD
1,1,3-trimethylcyclohexane	36	1.8	19	8	14	14	8
n-nonane	70	1.5	40	10	33	49	23
Methylnonane	79	1.2	55	9	48	31	12
decahydronaphthalene	100	1.0	66	8	58	68	23
n-tridecane	98	3.2	83	8	63	90	38
Pristine	83	4.2	88	17	78	67	27
n-octadecane	74	8.8	87	21	82	58	27

ANNEX 7 RECOVERIES OF A TEST MIXTURE OF HYDROCARBONS AFTER CONCENTRATION BY NITROGEN OR FREEZE DRYING.

Compounds	**Nitrogen**		**Freeze drying**		**Freeze drying vial covered with aluminium folio**	
	AVG	SD	AVG	SD	AVG	SD
Trimethylcyclohexane	40	1.5	57	24	38	21
Nonane	46	2.2	84	12	69	12
2-methylnonane	47	3.1	97	6.9	93	5.0
Decahydronaphthalene	49	2.6	101	4.8	105	4.5
Tridecane	49	2.8	103	3.4	111	4.3
Pristane	43	4.8	110	7.7	125	6.5
Octadecane	58	5.4	106	11	116	7.5
C9-alkylbenzenes	50	2.4	103	5.2	109	7.0
C10-alkylbenzenes	49	2.5	106	6.0	118	6.3
C11-alkylbenzenes	47	2.3	105	5.0	119	5.7
C12-alkylbenzenes	46	2.3	108	5.4	123	6.0
Naphthalene	49	4.0	107	5.7	120	6.3
Methylnaphthalene	48	4.2	107	6.9	122	5.8
Methylnaphthalene	51	1.6	111	6.6	129	6.8
Acenaphthylene	52	2.9	110	6.2	126	6.5
Acenaphthene	54	4.0	107	5.6	124	5.5
Fluorene	65	6.1	108	6.5	122	6.2
Phenanthrene	80	5.1	102	7.2	113	6.3
Anthracene	95	6.6	109	7.1	120	5.4
Fluoranthene	98	1.0	102	8.5	108	4.6
Pyrene	97	0.1	102	7.6	107	4.1
Chrysene	102	5.3	100	11	103	4.8
Benzo(a)anthracene	100	3.0	104	7.7	110	4.9
Benzo(b)fluoranthene	101	4.6	102	9.8	106	4.1
Benzo(a)pyrene	101	9	103	11	107	4.2
Indeno(1,2,3-cd)pyrene	104	14	101	12	100	2.2
Dibenzo(a,h)anthracene	105	14	99	12	96	2.8
Benzo(ghi)perylene	101	14	99	11	98	4.5

AVG: Average recovery
SD: Standard deviation

ANNEX 8 RECOVERIES OF SPIKED WATER WITH THE TEST COMPOUNDS USING THE FULL HC BLOCK SPECIATION METHOD.

Analysis was carried out with GC-MS. Shown are the individual levels, average concentration, standard deviation, and coefficient of variation.

Test compounds	#1	#2	#3	AVG	SD	CV (%)
Trimethylcyclohexane	41	48	47	45	3	8
Nonane	84	84	93	87	5	6
2-methylnonane	interf.	interf.	interf.			
cis-decahydronaphthalene	95	102	81	92	11	11
trans-decahydronaphthalene	98	106	80	95	13	14
Tridecane	92	78	85	85	7	8
Pristane	94	107	60	87	24	28
Octadecane	117	141	91	116	25	22
Anthracene	100	103	100	101	2	2
Pyrene	87	99	86	91	7	8
2-methylnaphthalene	98	95	106	100	6	6
1-methylnaphthalene	97	91	102	97	6	6
1,6-dimethylnaphthalene	168	144	153	155	12	8
2,6-dimethylnaphthalene	152	142	142	146	6	4
1-methylphenanthrene	106	109	110	108	2	2
2-methylphenanthrene	97	105	111	105	7	7
2-methylanthracene	115	107	106	109	5	4
3-methylphenanthrene	109	104	106	106	3	2
9-methylphenanthrene	112	108	110	110	2	2
1,7-dimethylphenanthrene	112	124	122	120	7	5
Retene	124	132	130	129	4	3
1-methylpyrene	115	127	129	124	7	6
4-methylpyrene	125	127	137	129	7	5
3-methylchrysene	108	109	115	111	4	3
6-methylchrysene	117	116	117	117	0.5	0.4

AVG: average
SD: standard deviation
CV: coefficient of variation

ANNEX 9 HC BLOCK SPECIATION DATA (µG/L) – DISCHARGES TO MARINE ENVIRONMENT

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C6 - C8	MIN					2.00E-01							
	MAX					1.85E+03							
	Average					6.18E+01							
	Median					5.00E-01							
	0.05					3.00E-01							
	0.95					7.40E+01							
	1st Quartile					4.00E-01							
	3rd Quartile					1.33E+01							
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C9-C11	MIN	1.68E-03	1.03E-01	2.50E-01	6.53E-02	4.87E-01	2.88E-01	1.13E-02			1.50E-02	1.50E-02	
	MAX	2.43E+02	5.00E+02	5.17E+02	2.14E+02	1.22E+03	3.13E+02	3.95E+02			3.11E+01	4.10E+01	
	Average	8.55E+00	2.24E+01	2.70E+01	1.34E+01	5.35E+01	1.73E+01	1.58E+01			1.52E+00	2.42E+00	
	Median	6.74E-02	8.73E-01	4.74E-01	5.14E-01	3.31E+00	1.21E+00	5.06E-01			1.50E-02	1.50E-02	
	0.05	1.50E-02	2.40E-01	2.50E-01	2.50E-01	9.51E-01	3.11E-01	1.63E-02			1.50E-02	1.50E-02	
	0.95	2.87E+01	1.28E+02	7.65E+01	5.36E+01	2.44E+02	5.53E+01	7.45E+01			4.00E+00	1.22E+01	
	1st Quartile	1.50E-02	2.50E-01	2.50E-01	2.50E-01	1.97E+00	4.97E-01	8.35E-02			1.50E-02	1.50E-02	
	3rd Quartile	8.01E-01	5.57E+00	4.52E+00	3.89E+00	1.34E+01	5.39E+00	1.97E+00			1.50E-01	3.58E-01	
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C12-C14	MIN	0.00E+00	2.50E-01	2.50E-01	2.50E-01	2.64E-01	1.91E-01	9.14E-02	3.15E-02	5.00E-01	1.50E-02	1.50E-02	
	MAX	4.01E+02	6.94E+02	1.43E+03	9.75E+02	2.90E+02	5.08E+02	5.65E+02	1.18E+02	2.41E+02	9.39E+01	7.79E+01	
	Average	2.52E+01	4.46E+01	6.67E+01	6.22E+01	2.01E+01	3.17E+01	3.06E+01	7.61E+00	1.55E+01	7.11E+00	5.79E+00	
	Median	4.67E-01	2.78E+00	2.71E+00	3.00E+00	1.68E+00	2.52E+00	2.30E+00	6.75E-01	2.50E+00	2.13E-01	1.55E-01	
	0.05	1.50E-02	2.50E-01	2.50E-01	2.50E-01	3.20E-01	5.45E-01	3.28E-01	4.18E-02	5.00E-01	1.50E-02	1.50E-02	
	0.95	1.40E+02	1.59E+02	2.02E+02	2.43E+02	8.80E+01	1.46E+02	1.19E+02	3.07E+01	4.30E+01	4.17E+01	3.55E+01	
	1st Quartile	6.67E-02	7.88E-01	6.21E-01	6.07E-01	6.12E-01	1.36E+00	8.61E-01	2.93E-01	5.00E-01	2.39E-02	2.45E-02	
	3rd Quartile	9.33E+00	2.37E+01	2.12E+01	3.03E+01	1.01E+01	1.15E+01	1.09E+01	3.52E+00	1.30E+01	2.58E+00	2.13E+00	

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	1.50E-02	2.50E-01	2.50E-01	2.50E-01	1.97E-01	6.60E-02	3.11E-02	2.18E-02	5.00E-01	2.54E-02	2.54E-02	
	MAX	7.67E+02	1.21E+03	6.10E+02	2.76E+02	7.20E+02	2.36E+02	2.81E+02	9.73E+01	1.77E+02	8.20E+01	8.20E+01	
	Average	4.41E+01	8.17E+01	6.39E+01	1.48E+01	3.95E+01	1.64E+01	1.58E+01	6.02E+00	1.84E+01	5.89E+00	5.89E+00	
C15-17	**Median**	2.85E+00	3.58E+00	6.78E+00	1.21E+00	2.63E+00	2.74E+00	1.57E+00	8.38E-01	3.70E+00	4.30E-01	4.30E-01	
	0.05	5.53E-02	2.50E-01	2.50E-01	2.50E-01	2.07E-01	1.61E-01	1.48E-01	5.14E-02	5.00E-01	4.19E-02	4.19E-02	
	0.95	1.86E+02	3.22E+02	2.67E+02	7.51E+01	1.48E+02	6.69E+01	6.87E+01	2.33E+01	7.00E+01	2.37E+01	2.37E+01	
	1st Quartile	6.41E-01	1.35E+00	1.74E+00	2.50E-01	7.11E-01	5.67E-01	6.46E-01	2.52E-01	5.00E-01	1.50E-01	1.50E-01	
	3rd Quartile	2.60E+01	3.50E+01	4.00E+01	6.18E+00	9.81E+00	1.00E+01	7.04E+00	3.81E+00	1.42E+01	3.15E+00	3.15E+00	
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	5.32E-02	2.50E-01	2.50E-01	2.50E-01	4.57E-02	0.00E+00			3.10E+00	1.50E-02	1.50E-02	2.07E-01
	MAX	8.53E+02	1.83E+03	5.19E+02	3.77E+02	4.36E+02	4.17E+02			5.00E+01	7.15E+01	7.15E+01	1.98E+02
	Average	4.55E+01	1.11E+02	4.80E+01	1.69E+01	3.33E+01	1.62E+01			2.12E+01	5.37E+00	5.37E+00	2.11E+01
C18-20	**Median**	3.22E+00	7.25E+00	7.14E+00	1.17E+00	3.02E+00	1.75E+00			1.95E+01	3.49E-01	3.49E-01	1.63E+00
	0.05	1.66E-01	3.37E-01	2.50E-01	2.50E-01	1.17E-01	2.41E-02			3.88E+00	1.50E-02	1.50E-02	2.43E-01
	0.95	1.75E+02	3.61E+02	2.32E+02	6.55E+01	1.94E+02	4.08E+01			4.48E+01	3.27E+01	3.27E+01	1.21E+02
	1st Quartile	1.20E+00	2.32E+00	1.45E+00	2.50E-01	7.53E-01	2.29E-01			7.65E+00	5.65E-02	5.65E-02	2.50E-01
	3rd Quartile	3.23E+01	9.45E+01	4.48E+01	4.32E+00	2.36E+01	6.86E+00			2.85E+01	2.90E+00	2.90E+00	6.72E+00
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	2.25E-01	2.50E-01	2.50E-01							1.50E-02	1.50E-02	2.21E-01
	MAX	5.53E+02	1.10E+03	2.60E+02							3.56E+01	3.57E+01	4.31E+02
	Average	3.51E+01	8.15E+01	2.50E+01							3.12E+00	3.31E+00	2.68E+01
C21-23	**Median**	3.92E+00	7.65E+00	4.66E+00							2.98E-01	3.93E-01	1.89E+00
	0.05	5.49E-01	5.59E-01	2.50E-01							1.50E-02	1.50E-02	2.50E-01
	0.95	1.41E+02	3.29E+02	9.45E+01							1.54E+01	1.52E+01	1.49E+02
	1st Quartile	1.66E+00	3.29E+00	8.60E-01							6.63E-02	1.50E-02	2.50E-01
	3rd Quartile	2.08E+01	8.03E+01	1.97E+01							2.49E+00	2.55E+00	9.91E+00

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C24-26	MIN	7.16E-01	2.50E-01	2.50E-01							1.50E-02	1.50E-02	2.00E-01
	MAX	7.31E+02	6.01E+02	1.69E+02							3.47E+01	2.83E+01	4.78E+02
	Average	4.85E+01	6.47E+01	1.31E+01							2.52E+00	2.21E+00	2.40E+01
	Median	4.38E+00	8.86E+00	2.81E+00							9.95E-02	1.29E-01	1.43E+00
	0.05	9.35E-01	8.85E-01	2.50E-01							1.50E-02	1.50E-02	2.50E-01
	0.95	1.02E+02	3.41E+02	6.15E+01							1.02E+01	1.21E+01	1.18E+02
	1st Quartile	2.42E+00	3.37E+00	3.25E-01							1.50E-02	1.50E-02	3.48E-01
	3rd Quartile	1.68E+01	6.53E+01	8.90E+00							7.15E-01	1.37E+00	1.10E+01

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C27-C29	MIN	4.94E-01	2.50E-01	1.59E-01							1.50E-02	1.50E-02	1.58E-01
	MAX	5.50E+02	4.91E+02	9.58E+01							3.85E+01	3.13E+01	1.22E+03
	Average	3.63E+01	4.08E+01	7.33E+00							2.48E+00	2.15E+00	6.27E+01
	Median	3.92E+00	6.31E+00	1.38E+00							1.59E-01	1.45E-01	4.20E+00
	0.05	6.60E-01	4.55E-01	2.50E-01							1.50E-02	1.50E-02	2.50E-01
	0.95	8.40E+01	1.86E+02	3.57E+01							1.07E+01	1.30E+01	2.45E+02
	1st Quartile	1.77E+00	1.93E+00	3.23E-01							1.52E-02	2.33E-02	5.45E-01
	3rd Quartile	1.46E+01	2.78E+01	5.17E+00							4.91E-01	4.76E-01	2.95E+01

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C30-C40	MIN	2.71E-01	2.50E-01								1.50E-02	1.50E-02	5.06E-02
	MAX	5.26E+02	6.13E+02								2.31E+01	2.31E+01	4.32E+01
	Average	2.81E+01	4.00E+01								1.45E+00	1.45E+00	3.32E+00
	Median	2.92E+00	4.50E+00								1.07E-01	1.07E-01	3.58E-01
	0.05	3.91E-01	3.48E-01								1.50E-02	1.50E-02	1.38E-01
	0.95	7.49E+01	2.19E+02								6.31E+00	6.31E+00	1.46E+01
	1st Quartile	1.09E+00	1.93E+00								2.50E-02	2.50E-02	2.50E-01
	3rd Quartile	1.22E+01	2.87E+01								3.72E-01	3.72E-01	2.17E+00

ANNEX 10 HC BLOCK SPECIATION DATA (µG/L) – DISCHARGES TO FRESHWATER

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C6 - C8	MIN					2.00E-01							
	MAX					1.07E+04							
	Average					2.85E+02							
	Median					1.30E+00							
	0.05					3.00E-01							
	0.95					8.47E+02							
	1st Quartile					4.00E-01							
	3rd Quartile					3.52E+01							
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C9-C11	MIN	4.53E-04	1.03E-01	5.50E-02	2.35E-01	1.84E-01	4.83E-03	5.43E-04			1.50E-02	1.50E-02	
	MAX	1.18E+03	5.29E+03	2.96E+03	8.25E+02	5.46E+03	1.78E+03	1.50E+03			2.85E+02	2.41E+02	
	Average	4.19E+01	1.21E+02	9.48E+01	3.54E+01	2.56E+02	7.87E+01	6.93E+01			8.62E+00	9.54E+00	
	Median	3.13E-02	5.33E-01	2.75E-01	5.00E-01	4.12E+00	1.48E+00	4.22E-01			1.50E-02	1.50E-02	
	0.05	1.50E-02	2.50E-01	2.17E-01	2.49E-01	7.49E-01	1.80E-01	1.09E-02			1.50E-02	1.50E-02	
	0.95	8.69E+01	2.68E+02	2.82E+02	1.95E+02	1.07E+03	3.31E+02	6.08E+02			3.14E+01	3.94E+01	
	1st Quartile	1.50E-02	2.50E-01	2.50E-01	2.50E-01	1.49E+00	3.18E-01	6.90E-02			1.50E-02	1.50E-02	
	3rd Quartile	1.55E+00	4.41E+00	2.52E+00	2.80E+00	2.66E+01	8.75E+00	3.35E+00			1.83E-01	3.26E-01	
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C12-C14	MIN	2.35E-03	1.65E-01	2.50E-01	2.50E-01	1.60E-01	1.29E-01	1.27E-02	3.92E-03	5.00E-01	1.50E-02	1.50E-02	
	MAX	1.64E+03	4.28E+03	3.25E+03	1.87E+03	2.12E+03	1.82E+03	2.50E+03	1.32E+02	3.00E+02	3.54E+02	2.81E+02	
	Average	6.70E+01	1.37E+02	1.42E+02	9.16E+01	7.42E+01	6.75E+01	8.98E+01	8.97E+00	1.89E+01	1.38E+01	1.22E+01	
	Median	2.09E-01	3.09E+00	3.84E+00	3.31E+00	1.54E+00	3.74E+00	3.82E+00	8.21E-01	2.30E+00	3.50E-01	1.93E-01	
	0.05	1.50E-02	2.50E-01	2.50E-01	2.50E-01	3.08E-01	3.70E-01	1.68E-01	9.01E-03	5.00E-01	1.50E-02	1.50E-02	
	0.95	1.60E+02	2.69E+02	5.10E+02	4.73E+02	2.35E+02	2.88E+02	2.45E+02	4.88E+01	1.13E+02	7.64E+01	7.14E+01	
	1st Quartile	1.50E-02	7.00E-01	7.74E-01	7.63E-01	5.18E-01	9.53E-01	5.60E-01	1.74E-01	5.00E-01	2.59E-02	1.50E-02	
	3rd Quartile	4.94E+00	1.83E+01	1.63E+01	2.36E+01	6.16E+00	1.09E+01	1.42E+01	3.88E+00	8.10E+00	1.46E+00	1.68E+00	

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	1.50E-02	2.50E-01	2.50E-01	1.61E-01	2.39E-02	4.13E-02	2.40E-02	8.14E-03	5.00E-01	1.50E-02	1.50E-02	
	MAX	1.05E+03	2.63E+03	3.71E+03	3.17E+02	7.48E+02	4.71E+02	2.27E+02	1.13E+02	4.23E+02	1.13E+02	1.13E+02	
	Average	4.74E+01	1.02E+02	1.17E+02	1.75E+01	3.28E+01	2.89E+01	1.53E+01	6.87E+00	2.69E+01	6.52E+00	6.52E+00	
C15-17	**Median**	2.79E+00	7.79E+00	5.91E+00	5.64E-01	1.43E+00	1.17E+00	1.47E+00	8.19E-01	2.50E+00	3.55E-01	3.55E-01	
	0.05	1.50E-02	2.50E-01	2.50E-01	2.50E-01	1.99E-01	1.42E-01	2.44E-01	5.77E-02	5.00E-01	1.50E-02	1.50E-02	
	0.95	2.02E+02	2.49E+02	5.31E+02	8.39E+01	8.34E+01	1.90E+02	6.66E+01	3.02E+01	1.33E+02	4.37E+01	4.37E+01	
	1st Quartile	5.45E-01	1.32E+00	1.76E+00	2.50E-01	5.57E-01	4.50E-01	5.00E-01	1.72E-01	5.00E-01	1.50E-02	1.50E-02	
	3rd Quartile	1.22E+01	1.95E+01	2.69E+01	2.50E+00	6.92E+00	5.18E+00	4.72E+00	2.92E+00	9.20E+00	2.35E+00	2.35E+00	

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	1.50E-02	2.50E-01	2.50E-01	2.50E-01	2.20E-02	0.00E+00			5.20E+00	1.50E-02	1.50E-02	1.73E-01
	MAX	1.09E+03	1.70E+03	2.03E+03	5.37E+02	5.85E+02	1.07E+02			7.46E+01	1.02E+02	1.02E+02	3.49E+02
	Average	3.61E+01	7.21E+01	6.63E+01	2.13E+01	2.10E+01	7.24E+00			2.67E+01	3.89E+00	3.89E+00	2.09E+01
C18-20	**Median**	2.51E+00	7.14E+00	6.30E+00	1.15E+00	1.78E+00	7.39E-01			6.75E+00	3.68E-01	3.68E-01	8.66E-01
	0.05	7.27E-02	4.27E-01	2.50E-01	2.50E-01	5.97E-02	2.58E-02			5.33E+00	1.50E-02	1.50E-02	2.50E-01
	0.95	1.38E+02	2.47E+02	2.06E+02	6.93E+01	8.31E+01	3.61E+01			7.12E+01	1.45E+01	1.45E+01	9.03E+01
	1st Quartile	8.81E-01	2.46E+00	1.48E+00	2.50E-01	6.11E-01	1.88E-01			5.95E+00	5.48E-02	5.48E-02	2.50E-01
	3rd Quartile	1.25E+01	3.20E+01	2.00E+01	4.88E+00	8.97E+00	3.01E+00			4.75E+01	1.76E+00	1.76E+00	5.46E+00

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	4.31E-02	2.26E-01	2.31E-01							1.50E-02	1.50E-02	1.46E-01
	MAX	9.08E+02	1.53E+03	7.31E+02							7.13E+01	8.61E+01	4.93E+02
	Average	2.97E+01	6.78E+01	3.89E+01							2.71E+00	2.97E+00	2.62E+01
C21-23	**Median**	3.38E+00	8.22E+00	3.32E+00							3.46E-01	2.50E-01	2.04E+00
	0.05	3.68E-01	3.44E-01	2.50E-01							1.50E-02	1.50E-02	2.46E-01
	0.95	9.80E+01	1.78E+02	1.43E+02							9.22E+00	8.93E+00	1.12E+02
	1st Quartile	1.19E+00	2.56E+00	1.38E+00							2.97E-02	2.29E-02	2.69E-01
	3rd Quartile	1.18E+01	3.58E+01	1.11E+01							1.06E+00	1.24E+00	5.75E+00

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	1.29E-01	2.50E-01	2.33E-01							0.00E+00	0.00E+00	1.58E-01
	MAX	6.90E+02	1.15E+03	3.45E+02							6.04E+01	5.82E+01	5.03E+02
	Average	2.57E+01	5.46E+01	1.85E+01							1.75E+00	1.75E+00	2.19E+01
C24-26	**Median**	3.90E+00	8.45E+00	1.91E+00							1.00E-01	6.39E-02	2.06E+00
	0.05	8.55E-01	4.85E-01	2.50E-01							1.50E-02	1.50E-02	2.16E-01
	0.95	7.91E+01	1.77E+02	7.88E+01							4.22E+00	3.97E+00	8.73E+01
	1st Quartile	2.51E+00	3.00E+00	6.42E-01							1.50E-02	1.50E-02	4.82E-01
	3rd Quartile	1.35E+01	3.28E+01	7.83E+00							5.20E-01	6.79E-01	6.31E+00
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	1.10E-01	2.50E-01	2.25E-01							1.50E-02	1.50E-02	2.50E-01
	MAX	3.89E+02	6.45E+02	1.51E+02							5.03E+01	4.91E+01	8.91E+02
	Average	1.50E+01	3.09E+01	7.60E+00							1.35E+00	1.27E+00	3.88E+01
C27-C29	**Median**	2.64E+00	4.13E+00	9.20E-01							1.40E-01	9.95E-02	5.96E+00
	0.05	7.02E-01	3.28E-01	2.50E-01							1.50E-02	1.50E-02	2.50E-01
	0.95	4.78E+01	1.04E+02	1.96E+01							2.36E+00	1.72E+00	1.38E+02
	1st Quartile	1.52E+00	1.63E+00	3.67E-01							2.69E-02	2.53E-02	9.27E-01
	3rd Quartile	8.53E+00	1.58E+01	2.81E+00							4.21E-01	3.96E-01	1.15E+01
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	7.76E-02	2.12E-01								1.50E-02	1.50E-02	5.95E-02
	MAX	3.61E+02	8.14E+02								2.19E+01	2.19E+01	9.92E+01
	Average	1.18E+01	3.56E+01								6.03E-01	6.03E-01	2.78E+00
C30-C40	**Median**	1.85E+00	2.95E+00								6.24E-02	6.24E-02	2.50E-01
	0.05	4.53E-01	2.50E-01								1.50E-02	1.50E-02	2.00E-01
	0.95	3.08E+01	1.07E+02								1.25E+00	1.25E+00	6.03E+00
	1st Quartile	9.64E-01	1.39E+00								2.50E-02	2.50E-02	2.50E-01
	3rd Quartile	4.95E+00	1.04E+01								1.79E-01	1.79E-01	6.87E-01

ANNEX 11 HC BLOCK SPECIATION DATA (µG/L) –DISCHARGES TO OFF-SITE WWTP

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C6 - C8	MIN					4.00E-01							
	MAX					2.58E+04							
	Average					4.32E+03							
	Median					6.22E+02							
	0.05					6.50E-01							
	0.95					2.07E+04							
	1st Quartile					1.37E+02							
	3rd Quartile					2.25E+03							
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C9-C11	MIN	5.44E-03	2.50E-01	2.50E-01	2.50E-01	3.04E+00	7.55E-01	7.15E-02			1.50E-02	1.50E-02	
	MAX	4.14E+02	8.46E+02	2.58E+02	4.91E+02	2.59E+03	9.01E+02	9.56E+02			6.40E+01	4.14E+01	
	Average	9.10E+01	1.76E+02	8.07E+01	8.48E+01	5.67E+02	1.43E+02	1.92E+02			1.28E+01	1.14E+01	
	Median	4.20E+01	8.30E+01	7.00E+01	4.54E+01	1.66E+02	6.22E+01	6.96E+01			5.47E+00	4.72E+00	
	0.05	1.46E-02	3.20E-01	2.50E-01	2.50E-01	3.08E+00	8.93E-01	2.15E-01			1.50E-02	1.50E-02	
	0.95	2.93E+02	5.83E+02	2.07E+02	3.10E+02	2.46E+03	6.02E+02	7.90E+02			4.42E+01	3.14E+01	
	1st Quartile	1.17E+01	2.20E+01	1.15E+01	1.03E+01	7.57E+01	1.74E+01	3.07E+01			1.01E+00	5.21E-01	
	3rd Quartile	1.29E+02	2.16E+02	1.18E+02	8.26E+01	3.00E+02	7.80E+01	1.29E+02			1.50E+01	2.09E+01	
		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
C12-C14	MIN	2.32E-01	7.96E-01	8.33E-01	5.75E-01	1.35E+00	1.95E+00	1.40E+00	3.92E-01	5.00E-01	3.92E-02	1.50E-02	
	MAX	6.56E+02	8.32E+02	4.58E+02	3.65E+02	3.27E+02	4.87E+02	6.41E+02	3.74E+01	2.50E+02	6.50E+01	6.40E+01	
	Average	2.05E+02	2.92E+02	1.49E+02	1.08E+02	9.50E+01	1.03E+02	1.57E+02	1.20E+01	7.07E+01	2.92E+01	2.53E+01	
	Median	1.56E+02	2.73E+02	1.18E+02	5.86E+01	6.46E+01	5.99E+01	1.13E+02	9.35E+00	1.90E+01	2.04E+01	1.55E+01	
	0.05	4.36E-01	1.40E+00	9.71E-01	6.95E-01	1.43E+00	2.11E+00	1.95E+00	4.27E-01	1.35E+00	4.53E-02	1.50E-02	
	0.95	5.48E+02	7.81E+02	3.82E+02	3.33E+02	3.05E+02	3.31E+02	5.16E+02	3.07E+01	2.30E+02	6.44E+01	6.14E+01	
	1st Quartile	2.23E+01	3.53E+01	2.28E+01	1.86E+01	1.63E+01	1.56E+01	2.69E+01	1.94E+00	1.04E+01	1.93E+00	1.91E+00	
	3rd Quartile	3.51E+02	4.09E+02	2.41E+02	1.44E+02	9.98E+01	1.19E+02	1.74E+02	1.93E+01	1.15E+02	6.13E+01	4.59E+01	

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	1.02E+00	1.93E+00	8.74E-01	2.50E-01	4.98E-01	7.50E-01	8.85E-01	3.54E-01	5.00E-01	1.50E-02	1.50E-02	
	MAX	4.69E+02	8.14E+02	4.59E+02	1.70E+02	3.37E+02	1.30E+02	1.09E+02	2.98E+01	1.40E+02	6.60E+01	6.60E+01	
	Average	1.79E+02	3.12E+02	1.31E+02	2.43E+01	1.02E+02	3.87E+01	3.06E+01	9.57E+00	5.54E+01	2.05E+01	2.05E+01	
C15-17	**Median**	1.13E+02	2.20E+02	7.38E+01	4.61E+00	7.64E+01	2.60E+01	1.60E+01	5.28E+00	2.30E+01	8.54E+00	8.54E+00	
	0.05	1.37E+00	2.12E+00	2.38E+00	3.47E-01	6.47E-01	9.73E-01	1.02E+00	4.01E-01	1.10E+00	6.28E-02	6.28E-02	
	0.95	4.69E+02	7.56E+02	4.10E+02	9.92E+01	2.69E+02	1.16E+02	8.62E+01	2.47E+01	1.36E+02	5.96E+01	5.96E+01	
	1st Quartile	2.17E+01	3.98E+01	1.71E+01	2.94E+00	9.29E+00	7.08E+00	4.27E+00	2.65E+00	8.87E+00	1.20E+00	1.20E+00	
	3rd Quartile	2.78E+02	5.54E+02	1.83E+02	1.90E+01	1.73E+02	4.76E+01	5.03E+01	1.70E+01	1.27E+02	3.27E+01	3.27E+01	
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	1.35E+00	1.72E+00	1.34E+00	3.00E-01	1.01E+00	2.68E-01			8.00E+00	2.28E-01	2.28E-01	5.50E-01
	MAX	4.50E+02	9.21E+02	4.04E+02	8.51E+01	1.92E+02	2.51E+01			8.00E+01	4.88E+01	4.88E+01	1.46E+02
	Average	1.44E+02	3.00E+02	9.44E+01	1.05E+01	6.54E+01	6.24E+00			3.80E+01	1.43E+01	1.43E+01	4.39E+01
C18-20	**Median**	6.38E+01	1.53E+02	4.04E+01	1.81E+00	3.91E+01	3.41E+00			2.60E+01	6.23E+00	6.23E+00	2.45E+01
	0.05	1.39E+00	2.48E+00	2.42E+00	4.11E-01	1.06E+00	2.75E-01			9.80E+00	2.80E-01	2.80E-01	6.62E-01
	0.95	3.64E+02	7.79E+02	3.32E+02	4.91E+01	1.91E+02	2.09E+01			7.46E+01	4.61E+01	4.61E+01	1.31E+02
	1st Quartile	1.59E+01	3.61E+01	8.34E+00	6.43E-01	6.38E+00	1.65E+00			1.70E+01	7.14E-01	7.14E-01	3.59E+00
	3rd Quartile	2.45E+02	5.00E+02	1.24E+02	5.11E+00	1.01E+02	6.18E+00			5.30E+01	1.92E+01	1.92E+01	6.88E+01
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	9.19E-01	1.60E+00	1.12E+00							1.32E-01	3.16E-02	3.47E-01
	MAX	3.17E+02	6.67E+02	3.55E+02							3.55E+01	3.21E+01	1.72E+02
	Average	9.97E+01	2.02E+02	6.59E+01							9.25E+00	8.44E+00	4.06E+01
C21-23	**Median**	3.41E+01	9.15E+01	1.57E+01							3.43E+00	3.29E+00	1.91E+01
	0.05	1.29E+00	3.13E+00	1.38E+00							1.58E-01	7.89E-02	7.26E-01
	0.95	2.56E+02	5.27E+02	2.62E+02							3.21E+01	2.34E+01	1.38E+02
	1st Quartile	9.09E+00	2.47E+01	6.44E+00							4.92E-01	3.91E-01	3.81E+00
	3rd Quartile	1.78E+02	3.45E+02	5.92E+01							1.14E+01	1.39E+01	4.82E+01

		normal paraffins	iso paraffins	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	poly aromatics	n-CC5	n-CC6	poly naphthenics
	MIN	4.69E-01	6.68E-01	2.50E-01							1.50E-02	1.50E-02	2.62E-01
	MAX	2.20E+02	4.60E+02	1.91E+02							2.36E+01	2.08E+01	1.58E+02
	Average	7.42E+01	1.43E+02	4.11E+01							6.39E+00	6.92E+00	2.95E+01
C24-26	**Median**	2.54E+01	7.62E+01	1.01E+01							3.36E+00	3.27E+00	1.33E+01
	0.05	1.83E+00	3.20E+00	9.99E-01							9.61E-02	1.50E-02	8.15E-01
	0.95	2.14E+02	3.84E+02	1.56E+02							2.13E+01	2.05E+01	1.11E+02
	1st Quartile	6.58E+00	1.47E+01	3.39E+00							2.40E-01	2.81E-01	2.66E+00
	3rd Quartile	1.28E+02	2.39E+02	4.75E+01							8.98E+00	1.20E+01	3.13E+01
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	2.13E-01	4.99E-01	2.50E-01							1.50E-02	1.50E-02	2.19E-01
	MAX	1.52E+02	2.59E+02	6.57E+01							1.77E+01	1.61E+01	3.17E+02
	Average	4.80E+01	8.44E+01	1.99E+01							5.36E+00	5.66E+00	8.89E+01
C27-C29	**Median**	2.63E+01	5.41E+01	6.57E+00							2.90E+00	2.75E+00	3.42E+01
	0.05	1.86E+00	3.11E+00	5.62E-01							8.15E-02	1.50E-02	2.78E+00
	0.95	1.40E+02	2.45E+02	6.45E+01							1.60E+01	1.56E+01	3.16E+02
	1st Quartile	4.17E+00	8.60E+00	2.08E+00							3.31E-01	2.25E-01	8.18E+00
	3rd Quartile	8.08E+01	1.39E+02	3.29E+01							9.21E+00	1.13E+01	1.14E+02
		normal paraffins	**iso paraffins**	**mono naphthenes**	**di naphthenes**	**mono aromatics**	**naphthenics mono aromatics**	**di aromatics**	**naphthenics di aromatics**	**poly aromatics**	**n-CC5**	**n-CC6**	**poly naphthenics**
	MIN	2.26E-01	4.20E-01								0.00E+00	0.00E+00	0.00E+00
	MAX	1.09E+02	2.80E+02								9.25E+00	9.25E+00	3.29E+01
	Average	3.64E+01	8.59E+01								2.13E+00	2.13E+00	9.44E+00
C30-C40	**Median**	1.90E+01	4.80E+01								8.00E-01	8.00E-01	2.70E+00
	0.05	1.30E+00	2.84E+00								2.50E-02	2.50E-02	2.54E-01
	0.95	9.90E+01	2.56E+02								7.47E+00	7.47E+00	2.85E+01
	1st Quartile	3.24E+00	7.40E+00								1.30E-01	1.30E-01	5.82E-01
	3rd Quartile	6.81E+01	1.34E+02								2.98E+00	2.98E+00	1.79E+01

ANNEX 12 HC BLOCK SPECIATION DATA (µG/L) PER REFINERY

Refinery code		1.00										
IVM LIMS nr		09/0132										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.00	0.10	<0.03	<0.03	0.3	<0.5	1.7	0.2	0.03			
C12 - C14	0.0	0.2	<0.03	<0.03	0.3	0.3	0.7	0.8	0.2	0.0	<1	
C15 - C17	0.1	0.5	<0.03	<0.03	1.6	0.2	0.5	0.7	0.9	0.1	1.1	
C18 - C20	0.5	0.8	<0.03	<0.03	1.1	0.7	0.8	0.1	<1	<1	<5	<0.5
C21 - C23	0.9	1.0	0.2	0.07	1.1	<0.5	<1	<1	<1	<1	<5	0.2
C24 - C26	2.1	1.8	0.04	0.03	0.6	<0.5	<1	<1	<1	<1	<5	0.2
C27 - C29	1.5	1.6	0.07	0.03	0.2	<0.5	<1	<1	<1	<1	<5	1.0
C30 - C40	0.6	0.9	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		2.00										
IVM LIMS nr		08/1136										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.2					
C9 - C11	2.4	3.3	0.1	0.2	1.3	1.5	5.8	5.4	1.4			
C12 - C14	13	28	2.0	1.8	11	14	16	18	21	19	28	
C15 - C17	29	83	3.2	3.2	24	1.0	63	8.9	27	16	70	
C18 - C20	40	128	4.5	4.5	18	1.1	43	5.6	<1	<1	50	27
C21 - C23	34	99	3.5	3.0	12	<0.5	<1	<1	<1	<1	<5	30
C24 - C26	26	86	1.1	1.6	8.3	<0.5	<1	<1	<1	<1	<5	26
C27 - C29	24	53	2.5	0.6	7.4	<0.5	<1	<1	<1	<1	<5	59
C30 - C40	21	61	0.6	0.6			<1	<1	<1	<1	<5	2.6

Refinery code		2.01										
IVM LIMS nr		08/1126										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.2					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.9	0.8	0.3			
C12 - C14	<0.03	0.7	0.2	0.1	3.6	5.2	0.7	3.8	5.0	5.0	3.4	
C15 - C17	0.7	2.1	0.1	0.1	7.8	1.6	1.4	0.2	1.6	6.0	5.0	
C18 - C20	1.4	4.5	0.2	0.2	6.7	3.2	3.4	3.1	<1	<1	<7	2.1
C21 - C23	1.9	5.1	<0.03	<0.03	4.7	<0.5	<1	<1	<1	<1	<5	4.4
C24 - C26	3.6	5.5	<0.03	0.07	1.9	<0.5	<1	<1	<1	<1	<5	5.0
C27 - C29	2.4	3.1	0.1	0.1	0.7	<0.5	<1	<1	<1	<1	<5	13
C30 - C40	1.8	2.0	0.06	0.06			<1	<1	<1	<1	<5	0.4

Refinery code		2.03	This refinery discharges to a neighbouring refinery									
IVM LIMS nr		09/0130										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.9					
C9 - C11	0.0	0.4	<0.03	0.05	0.6	1.1	3.1	1.0	0.4			
C12 - C14	2.6	3.6	0.9	0.8	6.7	9.2	1.5	3.2	3.6	0.5	3.7	
C15 - C17	2.4	2.6	0.5	0.5	6.9	3.3	0.5	3.2	1.2	0.4	1.7	
C18 - C20	1.4	1.7	0.3	0.3	3.5	1.8	1.1	0.3	<1	<1	<5	0.8
C21 - C23	0.9	1.6	0.1	0.1	1.1	<0.5	<1	<1	<1	<1	<5	0.3
C24 - C26	0.5	0.7	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.3
C27 - C29	0.2	0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.2
C30 - C40	0.2	0.4	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		2.04										
IVM LIMS nr		08/1205										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.6	0.3	0.04			
C12 - C14	0.02	0.4	<0.03	0.02	0.4	<0.5	0.5	0.8	0.4	0.2	<1	
C15 - C17	1.0	2.3	<0.03	<0.03	2.3	<0.5	0.6	0.4	0.5	0.1	<1	
C18 - C20	1.9	4.1	0.1	0.1	9.1	5.0	1.8	0.3	<1	<1	<5	0.5
C21 - C23	2.3	11	0.3	0.5	2.7	<0.5	<1	<1	<1	<1	<5	4.2
C24 - C26	2.9	8.5	0.4	0.2	2.0	<0.5	<1	<1	<1	<1	<5	5.0
C27 - C29	1.5	2.5	0.2	0.2	0.5	<0.5	<1	<1	<1	<1	<5	9.9
C30 - C40	1.2	2.3	0.08	0.08			<1	<1	<1	<1	<5	<0.5

Refinery code		3.00										
IVM LIMS nr		09/0131										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							170					
C9 - C11	59	154	13	22	149	105	166	37	78			
C12 - C14	156	326	59	53	307	301	93	132	169	10	136	
C15 - C17	229	471	66	66	459	170	200	130	58	19	131	
C18 - C20	239	575	49	49	404	85	125	25	<30	<30	80	117
C21 - C23	175	387	35	15	355	<15	<30	<30	<30	<30	<150	105
C24 - C26	124	307	13	20	191	<15	<30	<30	<30	<30	<150	64
C27 - C29	89	188	13	15	66	<15	<30	<30	<30	<30	<150	317
C30 - C40	89	280	4.0	4.0			<30	<30	<30	<30	<150	33

Refinery code		3.01										
IVM LIMS nr		08/1049										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.2	0.4	0.01			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.3	1.4	0.3	0.2	<1	
C15 - C17	0.06	<0.5	<0.03	<0.03	<0.5	<0.5	0.2	0.1	0.3	0.3	<1	
C18 - C20	0.1	<0.5	<0.03	<0.03	<0.5	<0.5	0.1	0.05	<1	<1	<5	<0.5
C21 - C23	0.4	0.3	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.9	0.4	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.7	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.4	<0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		4.01										
IVM LIMS nr		08/1379										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.3					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.9	0.5	0.1			
C12 - C14	0.2	0.9	0.03	<0.03	0.8	<0.5	1.0	0.9	0.5	0.2	<1	
C15 - C17	1.5	4.2	<0.03	<0.03	2.1	<0.5	0.7	1.0	0.5	0.2	<1	
C18 - C20	1.9	6.4	<0.03	<0.03	1.6	<0.5	1.0	0.2	<1	<1	<5	<0.5
C21 - C23	1.6	6.3	0.2	<0.03	0.3	<0.5	<1	<1	<1	<1	<5	1.0
C24 - C26	2.2	3.4	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.6
C27 - C29	1.2	1.7	0.1	0.06	<0.5	<0.5	<1	<1	<1	<1	<5	0.9
C30 - C40	0.7	1.1	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		5.00										
IVM LIMS nr		08/1403										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	22.8	5.5	0.5			
C12 - C14	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	10.1	9.9	5.0	0.9	<5	
C15 - C17	<0.2	2.7	0.04	0.04	1.7	<2.5	5.3	2.7	2.7	0.1	<5	
C18 - C20	1.0	4.1	0.06	0.06	1.3	<2.5	0.8	0.2	<5	<5	<25	<0.5
C21 - C23	3.9	3.3	0.12	0.08	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C24 - C26	8.8	2.4	<0.2	<0.2	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C27 - C29	5.9	1.3	<0.2	<0.2	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C30 - C40	4.5	1.2	<0.2	<0.2			<5	<5	<5	<5	<25	<0.5

Refinery code		5.02										
IVM LIMS nr		08/0810										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	2.0	0.8	0.1			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.5	2.0	2.1	0.6	<1	
C15 - C17	0.4	1.1	<0.03	<0.03	1.4	<0.5	0.4	0.4	1.3	1.2	<1	
C18 - C20	1.8	3.3	0.2	0.2	2.8	0.4	0.7	2.2	<1	<1	<5	0.2
C21 - C23	2.2	3.4	<0.03	<0.03	1.9	<0.5	<1	<1	<1	<1	<5	0.7
C24 - C26	3.6	3.4	0.05	0.03	0.8	<0.5	<1	<1	<1	<1	<5	1.2
C27 - C29	2.4	1.8	0.11	0.08	0.3	<0.5	<1	<1	<1	<1	<5	2.2
C30 - C40	1.7	1.5	0.06	0.06			<1	<1	<1	<1	<5	<0.5

Refinery code		5.03										
IVM LIMS nr		08/1206										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1252					
C9 - C11	8	13	1.0	1.8	10	7.5	971	276	948			
C12 - C14	20	46	3.6	3.7	23	19	24	78	66	23	27	
C15 - C17	20	57	2.0	2.0	12	0.6	10	7.1	8.0	6.6	12	
C18 - C20	15	39	1.5	1.5	9.5	<0.5	14	2.3	<1	<1	<5	5.3
C21 - C23	11	27	0.9	1.3	6.1	<0.5	<1	<1	<1	<1	<5	5.0
C24 - C26	8.2	19	0.6	0.8	2.8	<0.5	<1	<1	<1	<1	<5	3.9
C27 - C29	5.9	10	0.6	0.6	1.8	<0.5	<1	<1	<1	<1	<5	10.5
C30 - C40	4.1	8.5	0.2	0.2			<1	<1	<1	<1	<5	0.5

Refinery code		5.04										
IVM LIMS nr		08/1340										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							35					
C9 - C11	12	18	1.0	6.6	42	23	66	31	16			
C12 - C14	<0.03	23	0.7	1.8	175	363	31	72	77	23	26	
C15 - C17	<0.03	17	3.5	3.5	242	100	59	75	33	14	30	
C18 - C20	9.2	4.8	0.9	0.9	86	21	25	10	<1	<1	<5	35
C21 - C23	5.7	3.7	0.7	<0.03	22	<0.5	<1	<1	<1	<1	<5	62
C24 - C26	6.4	6.4	<0.03	<0.03	7.1	<0.5	<1	<1	<1	<1	<5	17
C27 - C29	3.3	4.1	0.4	0.2	0.9	<0.5	<1	<1	<1	<1	<5	7.5
C30 - C40	2.1	3.3	0.1	0.1			<1	<1	<1	<1	<5	0.4

Refinery code		5.04_2										
IVM LIMS nr		09/0162										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	0.2	<0.03	<0.03	0.1	0.2	4.1	1.5	0.2			
C12 - C14	2.1	4.8	0.3	0.2	1.6	2.1	1.8	10	3.8	0.5	2.3	
C15 - C17	5.4	12	0.8	0.8	5.9	0.7	1.7	2.3	1.6	1.0	2.0	
C18 - C20	6.3	16	0.8	0.8	6.0	1.2	1.7	1.1	<1	<1	<5	1.3
C21 - C23	3.8	11	0.6	0.5	3.7	<0.5	<1	<1	<1	<1	<5	1.1
C24 - C26	1.8	4.1	0.1	0.1	1.4	<0.5	<1	<1	<1	<1	<5	0.4
C27 - C29	0.7	1.2	0.03	0.02	<0.5	<0.5	<1	<1	<1	<1	<5	0.8
C30 - C40	0.5	0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		5.05										
IVM LIMS nr		09/0032										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							333					
C9 - C11	7.3	11.5	1.2	0.9	6.8	5.3	129	55	104			
C12 - C14	18	34	2.8	2.1	17	16	11	32	31	13	18	
C15 - C17	19	35	2.4	2.4	14	1.7	6.7	10	7.0	4.4	9.6	
C18 - C20	18	44	1.8	1.8	13	0.4	3.9	2.3	<2	<2	<10	4.1
C21 - C23	13	34	1.3	1.2	7.3	<1	<2	<2	<2	<2	<10	2.7
C24 - C26	8.6	21	0.8	0.7	3.7	<1	<2	<2	<2	<2	<10	2.0
C27 - C29	5.5	11	0.5	0.1	1.8	<1	<2	<2	<2	<2	<10	2.9
C30 - C40	3.8	8.6	0.1	0.1			<2	<2	<2	<2	<10	0.1

Refinery code		5.06										
IVM LIMS nr		08/0916										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							60					
C9 - C11	1.6	7.4	0.2	0.3	3.6	1.2	30	8.1	3.4			
C12 - C14	3.3	5.7	0.6	0.5	3.8	3.0	2.1	6.9	11.2	2.1	3.8	
C15 - C17	3.7	7.8	0.5	0.5	3.0	0.4	1.4	0.9	2.9	1.1	1.0	
C18 - C20	3.8	8.9	0.4	0.4	2.6	0.4	1.0	0.7	<1	<1	<5	<0.5
C21 - C23	3.4	6.5	0.3	0.1	1.5	<0.5	<1	<1	<1	<1	<5	0.1
C24 - C26	5.0	4.5	0.2	0.1	1.1	<0.5	<1	<1	<1	<1	<5	0.2
C27 - C29	3.7	3.2	0.3	0.1	0.5	<0.5	<1	<1	<1	<1	<5	0.3
C30 - C40	2.6	2.7	0.1	0.1			<1	<1	<1	<1	<5	<0.5

Refinery code		5.08										
IVM LIMS nr		08/0953										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.1	1.0	<0.03	<0.03	0.2	0.9	1.0	0.3	0.2			
C12 - C14	2.8	10	0.8	0.6	5.8	4.8	0.4	0.8	0.6	0.4	3.8	
C15 - C17	4.6	17	0.5	0.5	4.1	0.3	0.5	0.2	1.5	1.0	8.2	
C18 - C20	6.4	26	0.4	0.4	1.6	0.3	0.2	0.1	<1	<1	6.7	<0.5
C21 - C23	5.7	31	0.8	0.9	1.6	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	6.3	34	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	7.8	28	<0.03	<0.03	0.9	<0.5	<1	<1	<1	<1	<5	0.3
C30 - C40	7.3	24	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		5.10										
IVM LIMS nr		08/0780										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<6					
C9 - C11	0.1	0.8	<0.03	<0.03	0.2	0.3	5.0	1.6	0.6			
C12 - C14	2.1	5.8	0.4	0.2	3.1	2.3	2.9	4.2	4.4	2.7	5.2	
C15 - C17	2.9	7.6	0.6	0.6	5.6	0.5	3.1	3.2	5.1	1.9	6.0	
C18 - C20	4.7	15	0.7	0.7	7.7	0.5	4.8	5.8	<1	<1	5.7	1.3
C21 - C23	5.5	18	0.8	0.5	5.4	<0.5	<1	<1	<1	<1	<5	2.3
C24 - C26	8.0	14	0.5	0.1	2.4	<0.5	<1	<1	<1	<1	<5	2.4
C27 - C29	5.7	6.6	0.4	0.4	1.3	<0.5	<1	<1	<1	<1	<5	4.9
C30 - C40	6.2	6.4	0.3	0.3			<1	<1	<1	<1	<5	0.7

Refinery code		5.11										
IVM LIMS nr		08/0812										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							3.4					
C9 - C11	1.4	4.3	0.2	0.5	2.5	4.1	5.0	2.2	0.8			
C12 - C14	12	21	4.0	3.9	26	35	7.8	11	8.2	4.0	6.8	
C15 - C17	22	51	4.6	4.6	40	6.6	31	10	12	6.3	15	
C18 - C20	31	85	4.3	4.3	43	4.9	26	23	<1	<1	6.8	0.2
C21 - C23	28	92	3.7	3.1	26	<0.5	<1	<1	<1	<1	<5	0.3
C24 - C26	29	88	1.0	1.1	19	<0.5	<1	<1	<1	<1	<5	0.2
C27 - C29	28	55	1.2	1.3	14	<0.5	<1	<1	<1	<1	<5	0.6
C30 - C40	25	64	1.5	1.5			<1	<1	<1	<1	<5	0.1

Refinery code		5.12										
IVM LIMS nr		09/0077										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							4					
C9 - C11	0.3	0.7	0.04	0.09	<0.5	0.6	5.2	2.5	1.1			
C12 - C14	2.8	8.1	1.0	1.0	7.1	10	0.5	2.0	3.9	1.2	2.2	
C15 - C17	5.2	10	1.7	1.7	18	3.2	0.7	1.5	1.3	0.7	2.2	
C18 - C20	7.4	22	1.4	1.4	22	1.5	1.3	0.2	<1	<1	<5	5.3
C21 - C23	6.5	23	0.7	0.9	11	<0.5	<1	<1	<1	<1	<5	5.7
C24 - C26	6.4	16	0.2	<0.03	2.4	<0.5	<1	<1	<1	<1	<5	4.4
C27 - C29	4.3	8.7	<0.03	<0.03	1.0	<0.5	<1	<1	<1	<1	<5	7.5
C30 - C40	3.2	9.9	<0.03	<0.03			<1	<1	<1	<1	<5	0.3

Refinery code		5.15										
IVM LIMS nr		08/1247										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							14.8					
C9 - C11	<0.03	0.6	<0.03	<0.03	<0.5	<0.5	2.9	0.6	1.0			
C12 - C14	1.5	2.8	<0.03	0.2	1.1	0.7	<1	0.5	2.3	<1	1	
C15 - C17	1.9	2.7	0.2	0.2	1.1	<0.5	<1	<1	<1	<1	1.8	
C18 - C20	3.2	5.8	0.3	0.3	1.4	<0.5	<1	<1	<1	<1	<5	0.4
C21 - C23	3.1	7.6	0.1	0.4	0.9	<0.5	<1	<1	<1	<1	<5	0.8
C24 - C26	3.0	6.1	0.1	0.2	0.6	<0.5	<1	<1	<1	<1	<5	0.8
C27 - C29	2.7	4.1	0.2	0.09	0.4	<0.5	<1	<1	<1	<1	<5	2.1
C30 - C40	2.0	3.0	0.06	0.06			<1	<1	<1	<1	<5	<0.5

Refinery code		5.16										
IVM LIMS nr		09/0141										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.2					
C9 - C11	0.0	0.2	<0.03	<0.03	<0.5	<0.5	3.3	0.5	0.2			
C12 - C14	0.0	1	0.2	0.7	7.7	5.0	1.7	1.9	0.9	0.04	<1	
C15 - C17	1.3	4	0.4	0.4	14	2.1	1.4	4.1	1.1	0.1	<1	
C18 - C20	1.8	2	<0.03	<0.03	11	1.9	1.6	1.5	<1	<1	<5	1.5
C21 - C23	1.7	5	<0.03	<0.03	4.7	<0.5	<1	<1	<1	<1	<5	1.8
C24 - C26	3.0	9	0.1	0.1	5.0	<0.5	<1	<1	<1	<1	<5	1.4
C27 - C29	4.6	10	<0.03	<0.03	2.9	<0.5	<1	<1	<1	<1	<5	20
C30 - C40	13	54	<0.03	<0.03			<1	<1	<1	<1	<5	2.1

Refinery code		6.01										
IVM LIMS nr		08/1330										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.1	0.3	0.1			
C12 - C14	0.04	0.7	0.06	<0.03	0.8	1.2	0.6	0.8	0.4	0.2	<1	
C15 - C17	1.1	2.3	0.1	0.1	4.8	0.7	0.6	0.9	0.2	0.1	<1	
C18 - C20	1.5	5.0	<0.03	<0.03	6.8	2.9	0.9	0.9	<1	<1	<5	0.7
C21 - C23	2.0	8.2	<0.03	<0.03	3.3	<0.5	<1	<1	<1	<1	<5	3.0
C24 - C26	3.5	9.5	<0.03	<0.03	0.7	<0.5	<1	<1	<1	<1	<5	3.4
C27 - C29	2.5	4.0	0.2	0.1	0.7	<0.5	<1	<1	<1	<1	<5	10.4
C30 - C40	2.3	4.5	0.2	0.2			<1	<1	<1	<1	<5	0.2

Refinery code		6.04										
IVM LIMS nr		09/0116										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	0.3	<0.03	<0.03	<0.5	<0.5	1.2	0.3	<1			
C12 - C14	<0.03	0.7	0.02	0.05	1.6	0.6	0.5	0.4	0.3	0.1	<1	
C15 - C17	1.4	2.1	<0.03	<0.03	6.4	<0.5	4.4	0.5	0.3	0.1	<1	
C18 - C20	2.1	5.5	<0.03	<0.03	8.2	2.3	9.4	0.4	<1	<1	<5	0.8
C21 - C23	1.8	5.5	0.1	0.08	3.3	<0.5	<1	<1	<1	<1	<5	1.8
C24 - C26	3.9	6.4	0.08	<0.03	1.1	<0.5	<1	<1	<1	<1	<5	2.1
C27 - C29	1.9	2.8	0.1	0.1	0.5	<0.5	<1	<1	<1	<1	<5	11
C30 - C40	1.0	2.7	0.06	0.06			<1	<1	<1	<1	<5	0.4

Refinery code		6.05										
IVM LIMS nr		08/0981										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	0.5	<0.03	<0.03	<0.5	<0.5	0.2	0.005	<1			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.2	0.1	0.03	0.01	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.02	0.04	0.02	0.01	<1	
C18 - C20	0.07	<0.5	<0.03	<0.03	<0.5	<0.5	0.03	0.03	<1	<1	<5	<0.5
C21 - C23	0.3	0.4	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.6	0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.4	0.3	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.2	<0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		6.08N										
IVM LIMS nr		08/1336										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.8	0.2	0.1			
C12 - C14	0.05	<0.5	0.02	<0.03	<0.5	<0.5	0.4	0.3	0.2	0.2	<1	
C15 - C17	0.4	1.4	<0.03	<0.03	0.4	<0.5	0.6	0.3	0.3	0.2	<1	
C18 - C20	0.9	3.4	<0.03	<0.03	0.3	<0.5	0.6	0.0	<1	<1	<5	<0.5
C21 - C23	1.0	3.6	0.4	0.1	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.4	2.7	0.48	0.02	0.3	<0.5	<1	<1	<1	<1	<5	0.3
C27 - C29	1.0	1.4	0.08	0.05	<0.5	<0.5	<1	<1	<1	<1	<5	0.9
C30 - C40	0.7	1.3	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		6.08V										
IVM LIMS nr		08/1342										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.2					
C9 - C11	0.03	0.5	<0.03	<0.03	<0.5	0.2	0.6	0.2	0.03			
C12 - C14	2.8	7.1	0.6	0.2	2.6	8.2	0.5	1.6	0.6	0.2	<1	
C15 - C17	4.9	11	1.2	1.2	8.0	2.5	1.6	1.3	0.4	0.4	<1	
C18 - C20	5.8	12	0.9	0.9	5.8	2.8	1.9	1.1	<1	<1	<5	2.1
C21 - C23	3.6	9.9	1.3	0.3	2.1	<0.5	<1	<1	<1	<1	<5	2.5
C24 - C26	3.6	6.2	0.5	0.2	1.4	<0.5	<1	<1	<1	<1	<5	1.0
C27 - C29	2.4	2.7	0.2	0.2	0.7	<0.5	<1	<1	<1	<1	<5	4.5
C30 - C40	1.9	2.4	0.07	0.07			<1	<1	<1	<1	<5	0.2

Refinery code		6.10										
IVM LIMS nr		09/0133										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.1	0.7	0.04	<0.03	0.5	0.8	2.2	0.4	0.1			
C12 - C14	1.2	15	3.9	3.1	50	81	1.1	2.2	0.6	0.05	<1	
C15 - C17	25	31	2.9	2.9	222	25	2.6	9.7	2.2	0.1	9.8	
C18 - C20	40	74	<0.03	<0.03	232	20	23.6	0.0	<1	<1	<5	42
C21 - C23	31	85	<0.03	<0.03	94	<0.5	<1	<1	<1	<1	<5	41
C24 - C26	10	95	<0.03	<0.03	11	<0.5	<1	<1	<1	<1	<5	18
C27 - C29	3.8	15	<0.03	<0.03	3	<0.5	<1	<1	<1	<1	<5	19
C30 - C40	3.1	19	0.09	0.09			<1	<1	<1	<1	<5	3.7

Refinery code		6.11										
IVM LIMS nr		08/1198										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							5.4					
C9 - C11	<0.3	<5	<0.3	<0.3	<5	<5	16	2.0	0.001			
C12 - C14	<0.3	<5	<0.3	<0.3	<5	<5	1.8	3.7	0.4	0.01	<1	
C15 - C17	<0.3	<5	<0.3	<0.3	<5	<5	6.2	1.5	1.8	0.2	<1	
C18 - C20	<0.3	<5	<0.3	<0.3	<5	<5	1.8	0.5	<10	<10	<50	0.5
C21 - C23	0.4	<5	<0.3	<0.3	<5	<5	<10	<10	<10	<10	<50	0.7
C24 - C26	1.2	<5	<0.3	<0.3	<5	<5	<10	<10	<10	<10	<50	<5
C27 - C29	1.1	<5	<0.3	<0.3	<5	<5	<10	<10	<10	<10	<50	0.8
C30 - C40	0.7	<5	<0.3	<0.3			<10	<10	<10	<10	<50	<5

Refinery code		6.12										
IVM LIMS nr		09/0088										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.0					
C9 - C11	0.4	1.3	0.08	0.2	1.1	1.8	1.1	0.5	0.1			
C12 - C14	6.6	16	1.2	2.0	15	14	1.2	1.4	0.6	0.1	<1	
C15 - C17	21	50	2.7	2.7	33	<0.5	4.4	0.7	0.5	0.1	<1	
C18 - C20	29	139	2.3	2.3	23	<0.5	2.8	0.0	<1	<1	<5	9.5
C21 - C23	11	71	<0.03	<0.03	5.9	<0.5	<1	<1	<1	<1	<5	4.8
C24 - C26	8.5	34	<0.03	<0.03	0.7	<0.5	<1	<1	<1	<1	<5	1.5
C27 - C29	4.6	12	<0.03	<0.03	1.9	<0.5	<1	<1	<1	<1	<5	3.5
C30 - C40	2.7	5.2	0.1	0.1			<1	<1	<1	<1	<5	0.2

Refinery code		6.14										
IVM LIMS nr		08/1386										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	9.0	2.0	0.1			
C12 - C14	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	3.3	1.6	0.9	0.2	<1	
C15 - C17	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	1.1	0.6	1.0	0.1	<1	
C18 - C20	<0.2	<2.5	<0.2	<0.2	<2.5	<2.5	0.2	0.1	<5	<5	<25	<0.5
C21 - C23	1.0	<2.5	<0.2	<0.2	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C24 - C26	3.4	<2.5	<0.2	<0.2	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C27 - C29	2.3	<2.5	<0.2	<0.2	<2.5	<2.5	<5	<5	<5	<5	<25	<0.5
C30 - C40	1.3	<2.5	<0.2	<0.2			<5	<5	<5	<5	<25	<0.5

Refinery code		6.15										
IVM LIMS nr		08/0832										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	2.1	0.9	0.1			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.7	1.8	0.9	0.2	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	0.6	<0.5	0.3	0.4	0.5	0.4	<1	
C18 - C20	0.6	0.4	0.02	0.02	1.4	<0.5	0.3	0.8	<2	<2	<10	<0.5
C21 - C23	1.2	0.4	0.02	0.02	<0.5	<0.5	<2	<2	<2	<2	<10	<0.5
C24 - C26	3.4	1.9	0.05	0.02	<0.5	<0.5	<2	<2	<2	<2	<10	0.6
C30 - C40	1.2	1.0	<0.05	<0.05			<2	<2	<2	<2	<10	<0.5

Refinery code		6.17										
IVM LIMS nr		09/0089										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							21					
C9 - C11	1.1	2.2	<0.03	<0.03	<0.5	<0.5	1.4	0.3	1.2			
C12 - C14	8.7	21	1.7	1.2	16	47	0.9	1.2	2.9	1.3	2.5	
C15 - C17	7.3	12	3.3	3.3	50	68	7.3	3.8	3.4	2.3	28	
C18 - C20	4.0	6.1	3.2	3.2	48	57	1.8	1.4	<1	<1	5.2	23
C21 - C23	7.8	<0.5	4.0	7.2	66	<0.5	<1	<1	<1	<1	<5	24
C24 - C26	33	33	0.3	2.7	56	<0.5	<1	<1	<1	<1	<5	17
C27 - C29	25	49	<0.03	<0.03	14	<0.5	<1	<1	<1	<1	<5	63
C30 - C40	16	60	<0.03	<0.03			<1	<1	<1	<1	<5	5.6

Refinery code		6.18										
IVM LIMS nr		08/1335										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							2.5					
C9 - C11	2.1	1.8	0.1	0.3	1.4	1.8	5.9	2.2	2.6			
C12 - C14	12	12	1.1	1.2	7.2	7.4	3.0	3.9	6.4	0.8	1.2	
C15 - C17	11	14	1.0	1.0	4.2	0.7	1.3	1.0	0.7	0.5	1.3	
C18 - C20	12	14	0.8	0.8	4.2	0.6	1.4	0.1	<1	<1	<5	1.5
C21 - C23	13	13	0.9	0.6	3.3	<0.5	<1	<1	<1	<1	<5	2.3
C24 - C26	13	11	0.7	0.8	3.8	<0.5	<1	<1	<1	<1	<5	2.4
C27 - C29	8.9	8.3	0.5	0.7	1.7	<0.5	<1	<1	<1	<1	<5	8.5
C30 - C40	4.9	4.4	0.3	0.3	<0.5	<0.5	<1	<1	<1	<1	<5	0.5

Refinery code		6.22										
IVM LIMS nr		08/0782										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.1					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	2.2	1.0	0.2			
C12 - C14	<0.03	0.3	<0.03	0.04	0.8	1.0	0.9	3.2	0.5	0.2	<1	
C15 - C17	0.6	1.3	0.05	0.05	2.6	0.6	1.4	1.5	1.5	0.3	<1	
C18 - C20	1.9	3.9	0.2	0.2	2.6	1.0	1.0	4.2	<1	<1	<5	0.3
C21 - C23	2.2	7.4	0.3	0.4	1.3	<0.5	<1	<1	<1	<1	<5	0.7
C24 - C26	4.4	6.5	0.1	0.1	0.8	<0.5	<1	<1	<1	<1	<5	0.8
C27 - C29	3.1	3.5	0.2	0.2	0.6	<0.5	<1	<1	<1	<1	<5	3.4
C30 - C40	2.3	2.5	0.1	0.1			<1	<1	<1	<1	<5	0.7

Refinery code		6.23										
IVM LIMS nr		08/0989										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							158					
C9 - C11	1.6	8.1	0.3	0.3	2.3	<0.5	7.8	0.3	0.01			
C12 - C14	<0.03	0.2	<0.03	<0.03	<0.5	<0.5	0.3	0.6	0.01	0.01	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.1	0.2	0.04	0.02	<1	
C18 - C20	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.03	0.02	<1	<1	<5	<0.5
C21 - C23	0.04	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.1	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.1	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.08	<0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		6.24H										
IVM LIMS nr		08/1061										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1590					
C9 - C11	244	262	27	30	258	182	5459	1216	757			
C12 - C14	497	832	73	73	467	316	643	461	599	65	144	
C15 - C17	206	423	33	33	196	34	304	174	67	47	116	
C18 - C20	155	337	23	23	189	15	152	26	<10	<10	75	75
C21 - C23	92	300	11	17	109	<5	<10	<10	<10	<10	<50	95
C24 - C26	78	177	12	12	73	<5	<10	<10	<10	<10	<50	73
C27 - C29	47	101	9.2	8.2	37	<5	<10	<10	<10	<10	<50	137
C30 - C40	30	105	3.4	3.4			<10	<10	<10	<10	<50	9.6

Refinery code		6.24S										
IVM LIMS nr		08/1023										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							632					
C9 - C11	23	43	2.0	4.7	61	60	157	74	70			
C12 - C14	68	161	15	9.1	95	44	49	56	64	7.3	19	
C15 - C17	91	155	8.5	8.5	74	4.6	76	26	11	5.2	17	
C18 - C20	64	153	6.2	6.2	40	0.5	39	17	<1	<1	8.0	25
C21 - C23	34	91	3.4	3.1	16	<0.5	<1	<1	<1	<1	<5	19
C24 - C26	25	76	3.4	3.3	10	<0.5	<1	<1	<1	<1	<5	13
C27 - C29	26	54	2.9	2.7	6.6	<0.5	<1	<1	<1	<1	<5	37
C30 - C40	26	68	1.0	1.0			<1	<1	<1	<1	<5	12

Refinery code		6.26										
IVM LIMS nr		09/0115										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.6	0.1	0.05			
C12 - C14	0.2	2.0	<0.03	<0.03	0.4	0.4	0.3	1.0	0.3	0.1	<1	
C15 - C17	0.3	6.1	<0.03	<0.03	0.9	0.3	0.5	0.4	0.7	0.2	2.7	
C18 - C20	2.5	9.4	0.5	0.5	1.9	1.1	0.9	0.4	<1	<1	<5	0.4
C21 - C23	3.7	17	0.8	0.7	2.7	<0.5	<1	<1	<1	<1	<5	4.0
C24 - C26	5.0	11	0.2	0.00	1.7	<0.5	<1	<1	<1	<1	<5	4.4
C27 - C29	3.0	3.9	0.2	0.2	0.6	<0.5	<1	<1	<1	<1	<5	6.9
C30 - C40	1.2	2.5	0.06	0.06			<1	<1	<1	<1	<5	<0.5

Refinery code		6.27										
IVM LIMS nr		08/1024										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.02	0.6	<0.03	<0.03	<0.5	<0.5	3.0	0.8	0.1			
C12 - C14	0.2	0.8	0.05	<0.03	1.1	0.8	1.6	2.3	1.4	1.3	2.2	
C15 - C17	1.7	1.9	<0.03	<0.03	3.9	0.4	1.9	1.2	1.2	1.5	3.7	
C18 - C20	1.8	5.2	0.3	0.3	5.1	1.0	2.5	4.2	<1	<1	<5	0.8
C21 - C23	2.2	8.5	0.4	0.03	2.9	<0.5	<1	<1	<1	<1	<5	1.6
C24 - C26	4.4	9.5	0.3	<0.03	1.9	<0.5	<1	<1	<1	<1	<5	2.0
C27 - C29	3.5	8.1	0.3	<0.03	2.0	<0.5	<1	<1	<1	<1	<5	11
C30 - C40	2.9	6.8	0.1	0.1			<1	<1	<1	<1	<5	0.6

Refinery code		7.00										
IVM LIMS nr		08/1373										
	normal	iso paraffins	n-CC_5	n-CC_6	mono	di naphthenes	mono	naphthenics	di aromatics	naphthenics	Poly	poly
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.4	0.5	0.03			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.6	0.8	0.3	0.1	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.2	0.2	0.2	0.03	<1	
C18 - C20	0.05	<0.5	<0.03	<0.03	<0.5	<0.5	0.0	0.0	<1	<1	<5	<0.5
C21 - C23	0.2	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.7	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.5	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.3	<0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		7.01										
IVM LIMS nr		08/0972										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							4.8					
C9 - C11	3.8	12	<0.03	0.4	8.8	5.3	5.0	2.1	0.6			
C12 - C14	18	45	2.6	3.7	45	27	13	15	4.6	1.2	10	
C15 - C17	27	88	3.4	3.4	49	<0.5	34	13	13	3.9	49	
C18 - C20	32	141	2.8	2.8	45	<0.5	42	13	<1	<1	29	0.2
C21 - C23	24	124	2.1	1.0	20	<0.5	<1	<1	<1	<1	<5	0.2
C24 - C26	19	76	<0.03	<0.03	4.7	<0.5	<1	<1	<1	<1	<5	0.2
C27 - C29	18	46	<0.03	<0.03	7.4	<0.5	<1	<1	<1	<1	<5	0.4
C30 - C40	16	53	0.4	0.4			<1	<1	<1	<1	<5	<0.5

Refinery code		7.03										
IVM LIMS nr		09/0158										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	0.1	<0.03	<0.03	<0.5	<0.5	5.3	2.3	0.8			
C12 - C14	0.2	0.8	<0.03	<0.03	0.5	<0.5	3.0	2.4	5.6	0.5	2.5	
C15 - C17	0.6	1.5	0.03	0.03	0.4	<0.5	1.1	0.7	0.5	0.2	<2	
C18 - C20	0.8	1.8	0.06	0.06	0.3	<0.5	0.8	0.4	<1	<1	<5	<0.5
C21 - C23	1.2	2.5	0.08	0.03	0.3	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.6	2.0	0.06	0.04	0.3	<0.5	<1	<1	<1	<1	<5	0.3
C27 - C29	1.3	1.3	0.05	0.05	0.2	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	1.1	1.1	0.03	0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		8.01										
IVM LIMS nr		08/1060										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.1	0.3	0.1			
C12 - C14	0.05	1.1	0.1	0.05	2.0	2.9	0.4	1.3	0.6	0.3	<1	
C15 - C17	1.8	1.0	0.03	0.03	9.1	1.4	0.3	0.8	<1	0.7	<1	
C18 - C20	2.1	2.3	0.2	0.2	8.7	7.4	1.0	5.3	<1	<1	<5	2.0
C21 - C23	2.3	3.7	0.3	0.6	9.3	<0.5	<1	<1	<1	<1	<5	5.8
C24 - C26	3.0	6.9	0.00	0.06	6.0	<0.5	<1	<1	<1	<1	<5	5.8
C27 - C29	1.8	4.2	0.2	0.3	1.3	<0.5	<1	<1	<1	<1	<5	31
C30 - C40	1.4	4.0	0.06	0.06			<1	<1	<1	<1	<5	0.7

Refinery code		8.02										
IVM LIMS nr		08/0918										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.1	0.4	0.07	0.03	1.0	0.6	9.5	5.1	1.2			
C12 - C14	0.1	0.4	0.05	0.04	1.6	1.3	5.5	11	12.4	2.8	4.1	
C15 - C17	1.8	1.7	0.1	0.1	1.9	<0.5	2.5	0.6	3.2	2.5	4.5	
C18 - C20	1.1	2.4	0.09	0.09	0.7	<0.5	0.6	0.4	<1	<1	<5	<0.5
C21 - C23	1.0	1.5	0.04	0.02	0.2	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.8	1.5	<0.03	<0.03	0.2	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	1.4	0.8	0.06	0.04	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	1.4	0.6	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		8.03										
IVM LIMS nr		08/1337										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.1	0.3	0.1			
C12 - C14	0.1	<0.5	0.2	0.1	3.0	5.5	1.3	1.6	1.5	2.1	3.6	
C15 - C17	1.8	0.5	0.2	0.2	7.2	5.0	1.7	4.5	2.0	2.0	11.0	
C18 - C20	1.9	2.7	0.08	0.08	9.0	8.4	3.3	1.7	<1	<1	<5	2.4
C21 - C23	2.1	6.5	0.16	<0.03	4.2	<0.5	<1	<1	<1	<1	<5	3.3
C24 - C26	3.4	8.1	<0.03	<0.03	1.1	<0.5	<1	<1	<1	<1	<5	2.9
C27 - C29	2.4	4.3	<0.03	0.2	1.0	<0.5	<1	<1	<1	<1	<5	16
C30 - C40	2.1	4.5	0.08	0.08			<1	<1	<1	<1	<5	1.4

Refinery code		8.04S										
IVM LIMS nr		08/1236										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							105					
C9 - C11	0.3	<0.5	<0.03	<0.03	<0.5	<0.5	10.4	2.8	6.4			
C12 - C14	0.6	2.0	0.04	<0.03	0.8	0.6	1.4	2.0	2.5	0.4	<1	
C15 - C17	1.0	2.3	0.1	0.1	0.9	<0.5	0.8	0.7	0.9	0.4	<1	
C18 - C20	1.4	3.2	0.2	0.2	1.3	0.6	1.0	0.3	<1	<1	<5	0.5
C21 - C23	1.7	4.7	0.2	0.3	1.6	<0.5	<1	<1	<1	<1	<5	1.1
C24 - C26	3.2	5.7	0.2	0.3	1.7	<0.5	<1	<1	<1	<1	<5	1.4
C27 - C29	3.5	5.7	0.4	0.3	0.9	<0.5	<1	<1	<1	<1	<5	5.8
C30 - C40	2.4	5.3	0.1	0.1			<1	<1	<1	<1	<5	0.3

Refinery code		8.04N										
IVM LIMS nr		08/1237										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							25800					
C9 - C11	414	846	24	41	258	491	2328	303	624			
C12 - C14	656	832	63	59	226	148	284	175	391	37	250	
C15 - C17	469	637	25	25	108	16	157	53	63	30	140	
C18 - C20	278	425	15	15	45	4.9	76	6	<10	<10	<50	38
C21 - C23	195	271	8.4	14	37	<5	<10	<10	<10	<10	<50	58
C24 - C26	132	183	5.0	8.3	23	<5	<10	<10	<10	<10	<50	26
C27 - C29	73	91	5.8	7.9	16	<5	<10	<10	<10	<10	<50	73
C30 - C40	56	105	1.9	1.9			<10	<10	<10	<10	<50	5.8

Refinery code		8.07										
IVM LIMS nr		08/1341										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.5					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.9	0.3	0.1			
C12 - C14	0.1	0.4	0.03	0.02	0.8	0.7	0.6	0.7	0.6	0.3	<1	
C15 - C17	1.2	2.2	<0.03	<0.03	6.2	<0.5	1.8	0.9	0.4	0.4	9.8	
C18 - C20	2.4	4.1	<0.03	<0.03	15	2.0	3.8	1.8	<1	<1	<50	1.3
C21 - C23	2.7	6.6	0.4	0.3	9.2	<0.5	<1	<1	<1	<1	<5	5.5
C24 - C26	6.5	11	<0.03	<0.03	7.3	<0.5	<1	<1	<1	<1	<5	9.0
C27 - C29	4.7	6.3	0.5	0.4	2.9	<0.5	<1	<1	<1	<1	<5	14
C30 - C40	2.5	5.5	0.2	0.2			<1	<1	<1	<1	<5	0.1

Refinery code		8.09										
IVM LIMS nr		08/1407										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							50					
C9 - C11	0.1	0.6	<0.03	<0.03	<0.5	<0.5	3.0	0.5	0.7			
C12 - C14	0.3	1.7	<0.03	<0.03	<0.5	<0.5	0.3	0.2	0.7	0.03	<1	
C15 - C17	0.5	1.4	<0.03	<0.03	<0.5	<0.5	0.2	0.1	0.1	0.02	<1	
C18 - C20	0.6	2.1	0.05	0.05	<0.5	<0.5	0.1	0.1	<1	<1	<5	<0.5
C21 - C23	1.4	2.9	0.09	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	2.4	1.7	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	1.3	1.0	0.07	0.02	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.6	0.8	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		8.12										
IVM LIMS nr		09/0112										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							351					
C9 - C11	47	81	4.2	3.9	32	24.8	137	57	22			
C12 - C14	123	206	11	8.7	76	46.5	46	54	61	17	9.6	
C15 - C17	84	230	8.6	8.6	40.8	1.5	45	21	20	3.5	23	
C18 - C20	51	175	3.5	3.5	15	4	21	3.5	<2	<2	<10	8.4
C21 - C23	40	117	3.5	1.7	11	<1	<2	<2	<2	<2	<10	7.3
C24 - C26	57	113	3.4	1.7	10	<1	<2	<2	<2	<2	<10	8.4
C27 - C29	58	79	3.6	1.5	8	<1	<2	<2	<2	<2	<10	38
C30 - C40	30	62	0.7	0.7			<2	<2	<2	<2	<10	2.0

Refinery code		8.13										
IVM LIMS nr		08/1350										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							5.3					
C9 - C11	<0.03	0.4	<0.03	<0.03	0.5	0.3	4.1	0.8	0.4			
C12 - C14	1.2	5.3	0.4	0.3	5.5	8.5	0.9	1.5	0.5	0.2	<1	
C15 - C17	5.0	9.6	1.4	1.4	14.9	4.5	1.6	1.7	1.3	0.5	5.6	
C18 - C20	10	32	1.9	1.9	19	5.5	2.5	0.7	<1	<1	<5	5.6
C21 - C23	14	42	<0.03	1.2	27	<0.5	<1	<1	<1	<1	<5	8.0
C24 - C26	12	30	<0.03	<0.03	21	<0.5	<1	<1	<1	<1	<5	6.8
C27 - C29	8.1	12	<0.03	1.0	6.9	<0.5	<1	<1	<1	<1	<5	14
C30 - C40	4.5	7.3	0.2	0.2			<1	<1	<1	<1	<5	0.4

Refinery code		8.14										
IVM LIMS nr		08/1329										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							15.1					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.4	0.3	0.3			
C12 - C14	<0.03	0.3	<0.03	<0.03	0.6	0.9	0.3	0.5	0.7	0.3	<1	
C15 - C17	0.7	0.6	0.07	0.07	2.4	0.5	0.9	1.0	0.3	0.6	<1	
C18 - C20	0.9	1.1	0.09	0.09	2.0	1.7	1.9	1.2	<1	<1	<5	0.9
C21 - C23	1.1	1.7	0.4	0.1	1.3	<0.5	<1	<1	<1	<1	<5	2.0
C24 - C26	2.2	2.1	0.06	0.06	0.7	<0.5	<1	<1	<1	<1	<5	2.1
C27 - C29	1.5	1.3	0.1	0.03	0.4	<0.5	<1	<1	<1	<1	<5	5.6
C30 - C40	1.2	1.6	0.06	0.06			<1	<1	<1	<1	<5	<0.5

Refinery code		8.16										
IVM LIMS nr		08/1410										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.5					
C9 - C11	0.2	1.3	0.03	<0.03	0.8	0.6	5.1	2.2	0.6			
C12 - C14	3.0	6.6	0.6	0.2	6.9	3.6	1.7	4.5	5.3	1.9	3.9	
C15 - C17	11	22	1.4	1.4	13	<0.5	3.1	3.7	4.3	1.1	8.5	
C18 - C20	16	49	1.6	1.6	13	1.2	3.7	1.1	<1	<1	<5	7.4
C21 - C23	17	50	1.2	2.3	16	<0.5	<1	<1	<1	<1	<5	10
C24 - C26	16	52	1.0	<0.03	8.5	<0.5	<1	<1	<1	<1	<5	10
C27 - C29	6.9	18	<0.03	<0.03	1.6	<0.5	<1	<1	<1	<1	<5	12
C30 - C40	4.6	14	<0.05	<0.05			<1	<1	<1	<1	<5	0.3

Refinery code		8.18D										
IVM LIMS nr		08/1408										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							35					
C9 - C11	28.62	44	6.2	12	136	130	136	37	22			
C12 - C14	102.7	172	34	45	489	634	106	141	135	5.9	242	
C15 - C17	147.9	167	43	43	518	317	52	187	66	28	423	
C18 - C20	136.3	177	32	32	352	537	160	36	<10	<10	<50	232
C21 - C23	150.9	151	25	19	465	<5	<10	<10	<10	<10	<50	267
C24 - C26	85.9	182	12	8.7	129	<5	<10	<10	<10	<10	<50	121
C27 - C29	22.8	46	1.7	1.7	12	<5	<10	<10	<10	<10	<50	90
C30 - C40	10.0	25	0.2	0.2			<10	<10	<10	<10	<50	2.0

Refinery code		8.18F										
IVM LIMS nr		08/1409										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							38					
C9 - C11	6.3	5.5	0.5	1.3	12	9.0	84	23	8.6			
C12 - C14	22	34	9	5	61	81	14	43	25	8.2	15	
C15 - C17	49	40	11	11	119	34	5.1	30	11	5.7	15	
C18 - C20	55	69	14	14	81	67	13	5.6	<10	<10	<50	22
C21 - C23	42	77	9.0	6.8	108	<5	<10	<10	<10	<10	<50	32
C24 - C26	30	60	<0.3	3.4	31	<5	<10	<10	<10	<10	<50	19
C27 - C29	12	22	0.6	0.7	4.5	<5	<10	<10	<10	<10	<50	19
C30 - C40	6.7	11	<0.3	<0.3			<10	<10	<10	<10	<50	0.2

Refinery code		8.20										
IVM LIMS nr		08/1199										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.5	6	<0.5	<0.5	<10	<10	13	1.8	0.02			
C12 - C14	<0.5	15	0.7	0.3	36	199	4.6	11	0.8	0.2	<50	
C15 - C17	46	24	22	22	184	276	63	58	8.5	1.7	<50	
C18 - C20	100	162	36	36	175	377	241	41	<25	<25	<125	192
C21 - C23	225	329	24	6.9	94	<10	<25	<25	<25	<25	<125	431
C24 - C26	711	589	35	12	30	<10	<25	<25	<25	<25	<125	478
C27 - C29	550	491	38	26	35	<10	<25	<25	<25	<25	<125	1220
C30 - C40	526	613	23	23			<25	<25	<25	<25	<125	43

Refinery code		8.30										
IVM LIMS nr		09/0235										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							10690					
C9 - C11	1176	5285	285	241	2956	825	4799	1778	1500			
C12 - C14	1644	4283	354	281	3253	1014	2124	1818	2500	47	40	
C15 - C17	662	2627	64	64	749	19	502	313	66	15	<100	
C18 - C20	61	236	4.7	4.7	71	<10	35	7.0	<20	<20	<100	50
C21 - C23	30	59	0.6	<0.5	<10	<10	<20	<20	<20	<20	<100	9.1
C24 - C26	41	40	<0.5	<0.5	<10	<10	<20	<20	<20	<20	<100	7.9
C27 - C29	28	30	0.9	0.7	<10	<10	<20	<20	<20	<20	<100	8.7
C30 - C40	19	19	0.6	0.6			<20	<20	<20	<20	<100	0.5

Refinery code		9.00										
IVM LIMS nr		08/1372										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.1	0.2	0.05			
C12 - C14	<0.03	1.9	0.4	0.09	4.2	1.69	0.5	0.6	0.4	0.1	<1	
C15 - C17	1.5	6.7	<0.03	<0.03	9.3	<0.5	0.4	1.2	0.3	0.1	<1	
C18 - C20	3.0	9.5	0.4	0.4	9.3	0.7	0.9	0.5	<1	<1	<5	1.2
C21 - C23	2.1	12	<0.03	<0.03	2.4	<0.5	<1	<1	<1	<1	<5	2.1
C24 - C26	3.6	12	<0.03	<0.03	0.4	<0.5	<1	<1	<1	<1	<5	2.6
C27 - C29	2.6	6.0	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	7.7
C30 - C40	1.9	5.9	<0.05	<0.05			<1	<1	<1	<1	<5	0.2

Refinery code		9.01										
IVM LIMS nr		08/1387										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.3					
C9 - C11	<0.3	<5	<0.3	<0.3	<5	<5	13	2.6	2.0			
C12 - C14	5.7	13	2.5	1.6	21	94	8.2	3.3	4.3	1.0	2.0	
C15 - C17	24	15	6.6	6.6	45	103	6.9	27	2.7	2.5	4.3	
C18 - C20	11	14	6.5	6.5	47	141	6.9	12	<5	<5	<25	45
C21 - C23	16	18	4.2	15.2	59	<5	<5	<5	<5	<5	<25	58
C24 - C26	29	49	<0.3	6.0	31	<5	<5	<5	<5	<5	<25	19
C27 - C29	34	28	0.4	0.4	5.1	<5	<5	<5	<5	<5	<25	67
C30 - C40	30	27	0.4	0.4			<5	<5	<5	<5	<25	2.2

Refinery code		9.02										
IVM LIMS nr		09/0113										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							622					
C9 - C11	42	83	3.0	1.0	70	25	141	32	55			
C12 - C14	42	67	3.0	3.0	39	28	31	28	180	23	28	
C15 - C17	41	77	1.9	1.9	31	4.3	22	11	16	5.3	23	
C18 - C20	30	67	1.1	1.1	20	0.3	16	0.8	<1	<1	<5	11
C21 - C23	16	41	0.6	0.5	10	<0.5	<1	<1	<1	<1	<5	6.0
C24 - C26	8.8	20	0.2	0.2	4.9	<0.5	<1	<1	<1	<1	<5	3.3
C27 - C29	4.8	9.1	0.1	0.1	2.2	<0.5	<1	<1	<1	<1	<5	5.3
C30 - C40	3.6	8	<0.05	<0.05			<1	<1	<1	<1	<5	0.7

Refinery code		9.03										
IVM LIMS nr		08/1207										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							13.3					
C9 - C11	30	128	2.8	12	77	48	270	133	74			
C12 - C14	129	376	42	35	202	235	185	238	208	45	110	
C15 - C17	186	737	38	38	267	25	271	67	88	30	66	
C18 - C20	175	741	33	33	243	3.6	194	25	<20	<20	<50	121
C21 - C23	119	509	15	26	112	<5	<20	<20	<20	<20	<50	149
C24 - C26	102	341	6.6	14	71	<5	<20	<20	<20	<20	<50	118
C27 - C29	84	186	11	13	48	<5	<20	<20	<20	<20	<50	245
C30 - C40	75	219	6.3	6.3			<20	<20	<20	<20	<50	15

Refinery code		9.04R										
IVM LIMS nr		09/0118										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							6.1					
C9 - C11	2.0	6.1	0.2	0.8	1.8	3.1	40	27	6.8			
C12 - C14	12	25	1.8	1.6	13	11	8.7	23	42	3.2	9.9	
C15 - C17	15	34	1.4	1.4	8.4	0.3	9.1	2.2	3.5	0.8	9.1	
C18 - C20	11	32	1.0	1.0	5.3	0.5	7.1	0.3	<1	<1	<5	3.7
C21 - C23	8	28	1.2	1.3	7.6	<0.5	<1	<1	<1	<1	<5	4.2
C24 - C26	8.0	28	0.6	0.8	4.8	<0.5	<1	<1	<1	<1	<5	3.2
C27 - C29	6.8	17	<0.05	<0.05	1.6	<0.5	<1	<1	<1	<1	<5	8.8
C30 - C40	4.0	17	0.1	0.1			<1	<1	<1	<1	<5	3.5

Refinery code		9.04C										
IVM LIMS nr		09/0119										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.3					
C9 - C11	0.03	0.3	<0.03	<0.03	<0.5	1.01	2.6	0.8	0.4			
C12 - C14	0.3	0.7	0.42	0.36	11	13.5	6.8	3.7	0.6	0.1	2.2	
C15 - C17	2.4	10.3	<0.03	<0.03	4.4	0.6	1.3	1.5	1.2	0.5	<5	
C18 - C20	0.7	4.7	0.07	0.07	1	1	0.6	0.3	<1	<1	<5	<0.5
C21 - C23	1.6	2.8	0.08	0.06	2		<1	<1	<1	<1	<5	0.4
C24 - C26	4.5	4.2	<0.03	0.05	2		<1	<1	<1	<1	<5	0.7
C27 - C29	2.6	3.7	0.2	0.03	1		<1	<1	<1	<1	<5	7.1
C30 - C40	1.0	2.6	<0.05	<0.05	<0.5	<0.5	<1	<1	<1	<1	<5	2.0

Refinery code		9.11										
IVM LIMS nr		08/1137										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.03	0.5	<0.03	<0.03	0.1	0.2	2.4	0.9	0.1			
C12 - C14	<0.03	1.0	0.1	<0.03	4.7	3.9	1.1	2.6	3.3	3.3	1.0	
C15 - C17	5.1	1.4	0.04	0.04	8.3	0.6	0.5	0.5	2.4	2.8	1.5	
C18 - C20	0.9	5.7	0.1	0.1	6.3	1.7	0.6	0.8	<1	<1	<5	0.6
C21 - C23	1.5	6.0	<0.03	<0.03	4.8	<0.5	<1	<1	<1	<1	<5	1.2
C24 - C26	2.7	5.8	0.2	<0.03	1.9	<0.5	<1	<1	<1	<1	<5	0.7
C27 - C29	1.5	3.0	<0.03	<0.03	1.0	<0.5	<1	<1	<1	<1	<5	4.6
C30 - C40	1.1	2.2	0.04	0.04			<1	<1	<1	<1	<5	0.2

Refinery code		10.00										
IVM LIMS nr		08/1402										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.3	<5	<0.3	<0.3	<5	<5	33	8.7	0.4			
C12 - C14	<0.3	<5	<0.3	<0.3	<5	<5	16	14	3.9	0.8	<5	
C15 - C17	0.2	2.5	<0.3	<0.3	4.0	<5	8.0	5.6	4.8	0.4	<5	
C18 - C20	4.1	8.3	0.3	0.3	7.6	<5	1.4	0.8	<10	<10	<50	<0.5
C21 - C23	10	12	1.0	<0.3	2.6	<5	<10	<10	<10	<10	<50	<0.5
C24 - C26	16	9.0	0.5	<0.3	<5	<5	<10	<10	<10	<10	<50	<0.5
C27 - C29	10	6.7	0.5	<0.3	<5	<5	<10	<10	<10	<10	<50	<0.5
C30 - C40	7.6	4.0	<0.3	<0.3			<10	<10	<10	<10	<50	<0.5

Refinery code		10.02										
IVM LIMS nr		09/0061										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.3					
C9 - C11	0.1	1.4	0.3	0.6	5	6.9	2.3	1.2	1.5			
C12 - C14	9.3	24	4.0	4.2	32	39.6	3.0	11.5	2.7	3.5	2.0	
C15 - C17	46	187	8.6	8.6	40	6.2	0.8	7.2	6.9	3.1	14	
C18 - C20	34	226	2.9	2.9	6.3	<0.5	1.0	0.7	<1	<1	<5	5.7
C21 - C23	12	52	1.1	1.4	8.8	<0.5	<1	<1	<1	<1	<5	5.8
C24 - C26	12	26	<0.03	1.4	8.9	<0.5	<1	<1	<1	<1	<5	4.0
C27 - C29	7.7	14	<0.03	1.5	5.2	<0.5	<1	<1	<1	<1	<5	16
C30 - C40	5.3	13	0.4	0.4			<1	<1	<1	<1	<5	2.0

Refinery code		11.00										
IVM LIMS nr		08/0807										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							54					
C9 - C11	20	36	4.0	3.8	32	34	75	44	13			
C12 - C14	140	140	18	21	119	182	76	146	100	29	43	
C15 - C17	231	322	24	24	168	8.0	148	68	69	23	60	
C18 - C20	218	361	19	19	126	5.0	111	42	<1	<1	27	118
C21 - C23	141	281	12	12	74	<0.5	<1	<1	<1	<1	<5	79
C24 - C26	82	208	8.1	7.1	32	<0.5	<1	<1	<1	<1	<5	58
C27 - C29	54	105	5.4	4.1	14	<0.5	<1	<1	<1	<1	<5	138
C30 - C40	23	48	1.6	1.6	<0.5	<0.5	<1	<1	<1	<1	<5	5.8

Refinery code		11.01										
IVM LIMS nr		08/0781										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1850					
C9 - C11	243	500	31	41	404	214	1216	313	395			
C12 - C14	401	694	87	55	548	394	290	508	565	118	241	
C15 - C17	767	1207	82	82	610	75	720	236	281	97	177	
C18 - C20	853	1832	71	71	519	65	436	417	<100	<100	<500	198
C21 - C23	553	1098	36	36	260	<50	<100	<100	<100	<100	<500	178
C24 - C26	731	601	29	28	169	<50	<100	<100	<100	<100	<500	150
C27 - C29	529	386	33	31	96	<50	<100	<100	<100	<100	<500	477
C30 - C40	321	259	23	23			<100	<100	<100	<100	<500	35

Refinery code		11.02										
IVM LIMS nr		09/0034										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							17					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	2.4	0.9	0.3			
C12 - C14	1.9	2.8	0.2	0.1	2.7	3.3	1.0	1.6	1.0	0.4	<1	
C15 - C17	2.8	6.3	0.3	0.3	4.2	0.4	1.6	1.0	0.6	0.2	<1	
C18 - C20	2.7	7.6	0.5	0.5	4.6	1.4	1.9	0.4	<2	<2	<10	0.2
C21 - C23	2.1	7.0	0.3	0.2	1.7	<0.5	<2	<2	<2	<2	<10	0.4
C24 - C26	2.4	6.0	<0.03	<0.03	1.2	<0.5	<2	<2	<2	<2	<10	0.4
C27 - C29	1.8	3.6	<0.03	0.03	0.9	<0.5	<2	<2	<2	<2	<10	3.8
C30 - C40	0.9	3.8	<0.03	<0.03			<2	<2	<2	<2	<10	0.1

Refinery code		11.03										
IVM LIMS nr		08/1022										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.0	0.5	0.1			
C12 - C14	0.5	1.2	0.1	0.03	1.0	2.7	0.3	1.6	1.1	0.7	2.6	
C15 - C17	2.9	2.9	0.4	0.4	8.6	1.2	1.4	0.5	0.03	0.8	3.0	
C18 - C20	3.2	3.7	0.6	0.6	11	6.8	4.0	2.3	<1	<1	<6	2.7
C21 - C23	4.3	5.6	0.5	0.5	6.4	<0.5	<1	<1	<1	<1	<5	6.1
C24 - C26	7.3	6.7	0.1	0.3	3.7	<0.5	<1	<1	<1	<1	<5	6.5
C27 - C29	4.5	4.3	0.5	0.4	1.0	<0.5	<1	<1	<1	<1	<5	17.3
C30 - C40	3.4	3.9	0.1	0.1			<1	<1	<1	<1	<5	0.5

Refinery code		11.04										
IVM LIMS nr		08/0917										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.6					
C9 - C11	0.1	1.5	<0.03	0.09	1.0	0.9	1.5	0.6	0.1			
C12 - C14	0.3	2.5	0.2	0.07	5.5	21	0.8	3.8	1.1	0.6	3	
C15 - C17	0.6	0.9	0.7	0.7	13	13	9.8	2.9	4.9	0.9	4.9	
C18 - C20	2.2	1.7	<0.03	<0.03	8.7	23	7.3	9.5	<1	<1	<7	6.6
C21 - C23	2.1	1.1	1.7	0.7	8.5	<0.5	<1	<1	<1	<1	<5	21
C24 - C26	3.7	3.5	0.2	0.2	4.4	<0.5	<1	<1	<1	<1	<5	13
C27 - C29	2.2	2.8	0.4	0.1	0.8	<0.5	<1	<1	<1	<1	<5	57
C30 - C40	2.2	3.5	0.1	0.1			<1	<1	<1	<1	<5	2.2

Refinery code		11.05										
IVM LIMS nr		08/0811										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							2.2					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.5	0.5	0.3			
C12 - C14	<0.03	0.4	<0.03	<0.03	0.4	0.4	0.5	1.1	1.9	0.6	<1	
C15 - C17	1.0	3.0	<0.03	0.00	1.8	<0.5	0.5	0.4	1.3	1.2	3.3	
C18 - C20	1.5	7.2	<0.03	<0.03	2.7	0.5	0.8	2.3	<1	<1	3.1	0.4
C21 - C23	1.8	6.0	0.07	<0.03	0.9	<0.5	<1	<1	<1	<1	<5	1.0
C24 - C26	3.6	5.4	<0.03	<0.03	0.4	<0.5	<1	<1	<1	<1	<5	1.5
C27 - C29	2.7	4.1	0.06	0.05	0.6	<0.5	<1	<1	<1	<1	<5	4.2
C30 - C40	2.0	3.3	0.07	0.07			<1	<1	<1	<1	<5	0.2

Refinery code		11.06										
IVM LIMS nr		09/0094										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.5	0.3	0.1			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.5	1.0	1.4	0.3	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.3	0.2	1.0	0.6	<1	
C18 - C20	0.2	0.3	<0.03	<0.03	<0.5	<0.5	0.1	0.0	<1	<1	<5	<0.5
C21 - C23	0.5	0.6	0.02	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.6	0.9	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	1.1	0.8	0.04	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.2
C30 - C40	0.4	0.5	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		11.07										
IVM LIMS nr		08/0808										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.7					
C9 - C11	<0.03	0.2	<0.03	<0.03	<0.5	<0.5	4.8	4.0	0.8			
C12 - C14	1.3	3.8	0.5	0.2	2.7	2.3	1.4	4.3	6.1	2.2	5.7	
C15 - C17	7.8	16	1.1	1.1	11	1.4	7.2	2.6	6.4	2.5	12	
C18 - C20	15	45	2.4	2.4	22	2.8	9.1	13.5	<1	<1	6.2	5.7
C21 - C23	15	78	2.5	2.6	18	<0.5	<1	<1	<1	<1	<5	7.8
C24 - C26	17	71	<0.03	<0.03	5.7	<0.5	<1	<1	<1	<1	<5	11
C27 - C29	17	40	<0.03	<0.03	4.0	<0.5	<1	<1	<1	<1	<5	29
C30 - C40	15	43	0.5	0.5			<1	<1	<1	<1	<5	2.6

Refinery code		11.09										
IVM LIMS nr		09/0079										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							7.5					
C9 - C11	0.4	4.6	<0.05	<0.05	3.1	6.3	11	3.2	2.0			
C12 - C14	14	45	3.5	4.2	43	83	9.1	14	7.8	0.4	12	
C15 - C17	58	97	10.7	10.7	95	23	19	47	15	0.8	<50	
C18 - C20	59	161	9.7	9.7	90	35	75	1.3	<2	<2	<10	62
C21 - C23	52	156	7.0	8.0	50	<1	<2	<2	<2	<2	<5	58
C24 - C26	40	147	1.5	1.5	32	<1	<2	<2	<2	<2	<5	42
C27 - C29	14	123	0.5	0.5	18	<1	<2	<2	<2	<2	<5	148
C30 - C40	37	122	1.2	1.2			<2	<2	<2	<2	<5	15

Refinery code		12.00										
IVM LIMS nr		08/1204										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.0	0.2	0.1			
C12 - C14	0.03	<0.5	0.03	0.02	0.4	<0.5	0.2	0.5	0.3	0.1	<1	
C15 - C17	<0.5	0.7	<0.03	<0.03	0.3	<0.5	0.4	0.1	0.3	0.1	<1	
C18 - C20	0.4	0.5	0.02	0.02	0.4	<0.5	0.3	0.1	<1	<1	<5	<0.5
C21 - C23	0.4	2.3	0.08	0.05	0.5	<0.5	<1	<1	<1	<1	<5	0.3
C24 - C26	0.7	4.3	<0.03	<0.03	0.8	<0.5	<1	<1	<1	<1	<5	0.3
C27 - C29	1.1	2.8	<0.03	<0.03	0.4	<0.5	<1	<1	<1	<1	<5	2.3
C30 - C40	0.4	1.5	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		12.01										
IVM LIMS nr		09/0121										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.4					
C9 - C11	0.2	7.4	<0.03	<0.03	0.6	0.1	2.0	0.5	0.1			
C12 - C14	2.1	6.3	0.6	0.5	3.9	0.4	2.4	2.5	1.1	0.4	4.2	
C15 - C17	5.3	25	1.4	1.4	6.4	3.3	3.0	3.6	1.6	0.5	4.0	
C18 - C20	6.1	29	1.0	1.0	<0.5	<0.5	3.0	0.4	<1	<1	<5	1.9
C21 - C23	3.6	25	0.5	0.8	<0.5	<0.5	<1	<1	<1	<1	<5	1.6
C24 - C26	3.0	15	0.3	0.3	<0.5	<0.5	<1	<1	<1	<1	<5	0.9
C27 - C29	2.7	7.0	0.2	0.08	<0.5	<0.5	<1	<1	<1	<1	<5	3.3
C30 - C40	1.7	4.5	0.04	0.04	<0.5	<0.5	<1	<1	<1	<1	<5	0.2

Refinery code		12.02										
IVM LIMS nr		08/1203										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							11					
C9 - C11	1.1	2.4	0.1	0.4	2.2	2.2	12.1	3.9	1.3			
C12 - C14	8.1	14	2.2	1.7	7.6	6.6	3.1	5.6	11	1.4	8.5	
C15 - C17	17	33	2.7	2.7	14	0.4	3.1	2.9	1.5	1.2	3.7	
C18 - C20	11	32	1.2	1.2	6.7	<0.5	2.7	0.4	<1	<1	<5	4.0
C21 - C23	4.6	14	0.2	0.6	2.2	<0.5	<1	<1	<1	<1	<5	2.2
C24 - C26	4.1	8.1	0.1	0.3	1.2	<0.5	<1	<1	<1	<1	<5	1.4
C27 - C29	2.8	4.2	0.3	0.3	0.8	<0.5	<1	<1	<1	<1	<5	3.6
C30 - C40	2.2	4.1	0.1	0.1			<1	<1	<1	<1	<5	0.4

Refinery code		12.03										
IVM LIMS nr		08/1344										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							125					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	2.2	0.5	0.4			
C12 - C14	0.1	1.4	0.06	<0.03	1.1	0.7	1.5	1.0	1.3	0.2	<1	
C15 - C17	1.3	9.4	0.15	0.15	0.9	<0.5	0.6	0.4	0.5	0.1	<1	
C18 - C20	1.0	7.1	<0.03	<0.03	<0.5	<0.5	0.2	0.2	<1	<1	<5	<0.5
C21 - C23	0.6	2.0	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.1	0.8	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.7	0.3	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.5	0.2	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		12.04										
IVM LIMS nr		08/1374										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							12					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.0	0.3	0.04			
C12 - C14	0.4	0.8	0.02	0.07	0.9	1.2	0.8	1.0	0.9	0.3	<1	
C15 - C17	0.9	1.1	0.2	0.2	1.4	<0.5	0.3	0.7	0.3	0.1	<1	
C18 - C20	0.8	1.4	0.08	0.08	1.2	<0.5	0.2	0.1	<1	<1	<5	<0.5
C21 - C23	0.9	1.4	0.07	<0.03	0.3	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.9	1.0	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.5	0.5	0.02	0.02	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.3	0.3	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		13.00B										
IVM LIMS nr		08/0777										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							9.1					
C9 - C11	<0.03	0.5	0.09	0.04	1.8	0.7	9.9	3.3	12			
C12 - C14	<0.03	1.0	0.2	0.2	8.5	2.0	3.6	4.9	21	3.8	11	
C15 - C17	1.0	1.6	0.09	0.09	1.5	<1	3.3	1.3	2.2	1.7	3.7	
C18 - C20	2.4	3.4	0.2	0.2	0.6	<1	2.6	2.9	<2	<2	<10	0.2
C21 - C23	5.9	4.5	0.5	0.4	1.8	<1	<2	<2	<2	<2	<10	0.7
C24 - C26	14	9.2	0.6	0.6	2.8	<1	<2	<2	<2	<2	<10	1.7
C27 - C29	9.1	6.7	0.4	0.4	1.2	<1	<2	<2	<2	<2	<10	3.2
C30 - C40	5.0	2.9	0.2	0.2			<2	<2	<2	<2	<10	0.3

Refinery code		13.00A										
IVM LIMS nr		08/0776										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							252					
C9 - C11	<0.03	0.6	<0.03	<0.03	<1	<1	65	16	36			
C12 - C14	<0.03	0.9	<0.03	<0.03	<1	<1	2.0	5.3	20	1.4	5.7	
C15 - C17	<0.03	0.7	<0.03	<0.03	<1	<1	0.5	0.2	0.5	0.2	<10	
C18 - C20	0.5	0.5	<0.03	<0.03	<1	<1	0.3	0.1	<2	<2	<10	<2
C21 - C23	1.2	0.2	<0.03	<0.03	<1	<1	<2	<2	<2	<2	<10	<2
C24 - C26	3.3	0.3	<0.03	<0.03	<1	<1	<2	<2	<2	<2	<10	0.2
C27 - C29	2.4	0.4	0.04	0.03	<1	<1	<2	<2	<2	<2	<10	0.3
C30 - C40	1.7	0.4	<0.05	<0.05			<2	<2	<2	<2	<10	<2

Refinery code		13.01										
IVM LIMS nr		09/0117										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							21					
C9 - C11	<0.1	12	0.4	0.9	4.6	3.5	16	8	4			
C12 - C14	13	31	4.0	3.4	19	18	7.3	10	43	13	31	
C15 - C17	26	63	4.9	4.9	36	5.4	16	12	12	5.6	38	
C18 - C20	27	94	4.9	4.9	52	4.3	16	4.0	<3	<3	<30	6.7
C21 - C23	21	80	3.5	3.6	35	<2	<3	<3	<3	<3	<30	6.4
C24 - C26	15	50	1.6	2.0	11	<2	<3	<3	<3	<3	<30	4.7
C27 - C29	10	25	1.1	1.0	5.2	<2	<3	<3	<3	<3	<30	14
C30 - C40	9.5	30	0.2	0.2			<3	<3	<3	<3	<30	1.3

Refinery code		13.02S										
IVM LIMS nr		08/0841										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							417					
C9 - C11	27	38	6.1	6.0	31	27	323	102	48			
C12 - C14	74	115	14	16	93	90	50	144	205	40	110	
C15 - C17	76	131	14	14	109	15	55	26	67	22	100	
C18 - C20	48	111	6.3	6.3	55	3.8	23	14	<1	<1	<5	14
C21 - C23	27	64	2.5	2.1	21	<0.5	<1	<1	<1	<1	<5	14
C24 - C26	19	32	1.6	1.5	9.5	<0.5	<1	<1	<1	<1	<5	6.9
C30 - C40	7.2	11	0.6	0.6			<1	<1	<1	<1	<5	1.3

Refinery code		13.02N										
IVM LIMS nr		08/0842										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.3					
C9 - C11	<0.03	0.4	<0.03	<0.03	<0.5	<0.5	3.2	3.0	0.4			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.1	9.5	16.1	8.5	5.7	
C15 - C17	<0.5	0.5	<0.03	<0.03	<0.5	<0.5	0.5	0.1	2.3	3.0	5.3	
C18 - C20	0.5	1.2	0.04	0.04	<0.5	<0.5	0.2	0.3	<1	<1	<5	<0.5
C21 - C23	1.2	1.4	0.03	0.02	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	2.9	1.4	0.09	0.2	<0.5	<0.5	<1	<1	<1	<1	<5	0.3
C27 - C29	2.1	1.0	0.1	0.08	<0.5	<0.5	<1	<1	<1	<1	<5	0.3

Refinery code		13.02R										
IVM LIMS nr		08/1200										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							232					
C9 - C11	801	958	105	129	499	315	1923	829	591			
C12 - C14	1287	1923	169	180	701	444	1039	665	1188	132	300	
C15 - C17	1053	1516	113	113	656	82	748	214	227	93	350	
C18 - C20	1091	1703	102	102	516	31	585	102	<10	<10	61	280
C21 - C23	908	1525	71	86	448	<5	<10	<10	<10	<10	<50	493
C24 - C26	690	1146	60	58	247	<5	<10	<10	<10	<10	<50	503
C27 - C29	389	645	50	49	151	<5	<10	<10	<10	<10	<50	891
C30 - C40	361	814	22	22			<10	<10	<10	<10	<50	99

Refinery code		13.04										
IVM LIMS nr		09/0159										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							15500					
C9 - C11	149	275	17	21	84	45.4	292	80	101			
C12 - C14	264	380	31	35	118	59	65	60	113	2.6	17	
C15 - C17	113	220	8.1	8.1	27	2.6	17	17	7.3	3.8	14	
C18 - C20	58	111	4.5	4.5	12	0.7	10	6.8	<1	<1	<5	6.4
C21 - C23	34	64	1.6	3.3	14	<0.5	<1	<1	<1	<1	<5	8.9
C24 - C26	21	48	0.9	2.4	7.6	<0.5	<1	<1	<1	<1	<5	5.1
C27 - C29	13	22	1.6	2.3	4.7	<0.5	<1	<1	<1	<1	<5	25
C30 - C40	12	28	0.4	0.4			<1	<1	<1	<1	<5	0.6

Refinery code		13.05										
IVM LIMS nr		08/1036										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	0.05	0.9	<0.03	0.09	0.4	0.8	8.0	4.5	6.8			
C12 - C14	1.7	3.1	0.2	0.2	2.4	2.5	2.7	6.7	14	4.4	13	
C15 - C17	3.7	4.2	0.7	0.7	4.7	0.6	3.7	2.6	1.4	3.8	14	
C18 - C20	4.6	7.2	0.7	0.7	6.2	1.2	33	4.0	<1	<1	12	0.9
C21 - C23	4.1	7.7	0.3	0.8	4.7	<0.5	<1	<1	<1	<1	<5	1.2
C24 - C26	4.0	9.4	0.4	0.5	2.8	<0.5	<1	<1	<1	<1	<5	0.7
C27 - C29	3.9	7.8	0.3	0.5	1.5	<0.5	<1	<1	<1	<1	<5	6.5
C30 - C40	2.9	7.3	0.1	0.1			<1	<1	<1	<1	<5	0.9

Refinery code		13.07										
IVM LIMS nr		08/0778										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							44					
C9 - C11	7.7	38	3.3	0.9	23	26	55	48	2			
C12 - C14	74	159	16	16	106	91	48	100	119	31	36	
C15 - C17	101	197	20	20	142	25	64	47	46	15	74	
C18 - C20	105	239	15	15	135	7.4	64	6.9	<10	<10	<50	16
C21 - C23	77	186	6	13	74	<10	<10	<10	<10	<10	<50	14
C24 - C26	45	113	5	5	37	<10	<10	<10	<10	<10	<50	9.3
C27 - C29	27	60	2.9	2.0	13	<10	<10	<10	<10	<10	<50	34
C30 - C40	20	59	0.7	0.7			<10	<10	<10	<10	<50	4.4

Refinery code		13.10										
IVM LIMS nr		08/1038										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							17					
C9 - C11	0.8	2.8	0.03	0.09	0.9	<0.5	2.0	0.4	0.01			
C12 - C14	<0.03	0.9	<0.03	<0.03	<0.5	<0.5	0.5	0.5	0.1	0.04	<1	
C15 - C17	0.2	0.6	<0.03	<0.03	<0.5	<0.5	0.2	0.2	0.1	0.1	<1	
C18 - C20	0.5	0.9	0.07	0.07	0.5	<0.5	0.3	0.4	<1	<1	<5	<0.5
C21 - C23	0.8	1.7	0.06	0.2	0.6	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.6	1.7	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	1.0	1.0	0.04	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.3
C30 - C40	0.6	0.4	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		13.11									
IVM LIMS nr		08/1343									
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	7.7	1.7	2.7			
C12 - C14	0.4	1.0	0.04	0.02	0.5	<0.5	0.7	1.1	9.6	1.0	<1	
C15 - C17	0.8	1.6	0.04	0.04	0.4	<0.5	0.6	0.3	0.9	0.3	<1	
C18 - C20	1.0	2.3	0.09	0.09	0.7	<0.5	0.2	0.0	<1	<1	<5	<0.5
C21 - C23	1.2	2.7	<0.03	0.12	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	2.0	2.8	<0.03	0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	1.4	1.9	0.07	0.07	<0.5	<0.5	<1	<1	<1	<1	<5	0.5
C30 - C40	0.8	2.0	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		13.12									
IVM LIMS nr		08/1059									
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.2	0.4	0.04			
C12 - C14	<0.03	0.3	0.05	0.03	0.6	2.5	0.5	2.1	0.6	0.6	<5	
C15 - C17	0.8	1.3	0.4	0.4	6.8	2.3	0.6	0.8	2.3	0.8	2.6	
C18 - C20	1.2	1.7	0.1	0.1	6.4	2.1	0.8	0.2	<1	<1	<5	1.6
C21 - C23	1.1	2.4	<0.03	<0.03	1.7	<0.5	<1	<1	<1	<1	<5	1.9
C24 - C26	1.5	2.3	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.7
C27 - C29	0.9	1.0	0.04	0.04	<0.5	<0.5	<1	<1	<1	<1	<5	1.1
C30 - C40	0.5	0.7	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		13.13									
IVM LIMS nr		08/1382									
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							44					
C9 - C11	4.5	325	68	125	1558	482	441	96	2.3			
C12 - C14	<0.5	92	105	71	2662	1865	190	269	114	102	61	
C15 - C17	201	222	46	46	3715	225	<20	471	225	113	282	
C18 - C20	203	552	<0.5	<0.5	2031	298	<20	107	<20	<20	<50	349
C21 - C23	158	811	<0.5	<0.5	731	<10	<20	<20	<20	<20	<50	369
C24 - C26	157	703	<0.5	<0.5	345	<10	<20	<20	<20	<20	<50	290
C27 - C29	80	386	<0.5	<0.5	128	<10	<20	<20	<20	<20	<50	601
C30 - C40	46	595	<0.5	<0.5			<20	<20	<20	<20	<50	4.4

Refinery code		13.14									
IVM LIMS nr		08/1349									
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							74					
C9 - C11	29	132	18	36	517	161	244	44	25			
C12 - C14	154	151	94	78	1435	975	88	85	51	11	15	
C15 - C17	140	109	1.4	1.4	609	8.3	116	27	21	5.1	47	
C18 - C20	58	145	5.6	5.6	146	<5	57	8.2	<10	<10	<50	13
C21 - C23	47	92	4.6	3.2	61	<5	<10	<10	<10	<10	<50	9.9
C24 - C26	54	112	5.4	5.4	61	<5	<10	<10	<10	<10	<50	16
C27 - C29	37	89	0.7	2.9	21	<5	<10	<10	<10	<10	<50	46
C30 - C40	12	29	0.3	0.3			<10	<10	<10	<10	<50	<0.5

Refinery code		14.00									
IVM LIMS nr		09/0052									
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.0					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.9	1.0	0.1			
C12 - C14	0.7	3.1	0.3	0.2	2.9	2.6	0.6	3.0	2.5	1.0	1.5	
C15 - C17	5.1	11	0.7	0.7	6.0	0.5	0.7	3.7	2.4	0.8	4.1	
C18 - C20	5.6	15	0.7	0.7	7.0	<0.5	1.1	0.4	<2	<2	<10	0.6
C21 - C23	4.2	15	0.3	0.9	3.5	<0.5	<2	<2	<2	<2	<10	0.7
C24 - C26	3.9	9	0.2	0.3	1.2	<0.5	<2	<2	<2	<2	<10	0.6
C27 - C29	2.5	4.2	0.2	0.08	0.6	<0.5	<2	<2	<2	<2	<10	1.1
C30 - C40	1.3	3.0	<0.03	<0.03			<2	<2	<2	<2	<10	<0.5

Refinery code		14.01										
IVM LIMS nr		09/0120										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							802					
C9 - C11	18.8	49	1.6	2.7	21.2	18.3	389	78	90			
C12 - C14	93.3	111.2	17	13	98.3	79.7	19	41	103	7.1	17	
C15 - C17	68.1	119	4.9	4.9	37	2.4	6.6	6.6	15	2.4	9.3	
C18 - C20	40.4	73	3.2	3.2	16	2.0	8.6	0.5	<10	<10	<50	1.3
C21 - C23	29.2	44	2.7	1.7	10.9		<10	<10	<10	<10	<50	1.9
C24 - C26	22.1	30.7	1.6	1.7	8.7		<10	<10	<10	<10	<50	1.5
C27 - C29	14.0	19.0	1.3	1.4	4.8		<10	<10	<10	<10	<50	9.5
C30 - C40	1.7	4.5	0.3	0.3			<10	<10	<10	<10	<50	0.4

Refinery code		15.01										
IVM LIMS nr		09/0122										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							3.2					
C9 - C11	0.4	4.2	0.1	0.1	1.3	1.5	2.4	0.5	0.2			
C12 - C14	6.3	12	1.2	1.4	10	11.3	1.7	1.5	0.9	0.0	1.6	
C15 - C17	11	24	1.1	1.1	6.5	0.7	3.3	2.3	0.7	0.1	2.6	
C18 - C20	10	21	1.0	1.0	7.1	0.8	5.4	0.6	<1	<1	<5	2.7
C21 - C23	7.9	25	1.0	0.9	4.7	<0.5	<1	<1	<1	<1	<5	3.4
C24 - C26	6.8	22	0.6	0.5	3.0	<0.5	<1	<1	<1	<1	<5	3.8
C27 - C29	7.0	14	0.6	0.5	1.9	<0.5	<1	<1	<1	<1	<5	9.9
C30 - C40	6.1	16	0.2	0.2			<1	<1	<1	<1	<5	0.8

Refinery code		16.00										
IVM LIMS nr		08/0809										
	normal paraffins	iso paraffins	n-CC5	n-CC6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	3.7	6.8	0.4	1.0	5.8	6.9	12	7.4	2.7			
C12 - C14	31	44	6.5	5.9	32	48	20	45	27	8	13	
C15 - C17	77	111	10	10	88	9.4	49	40	25	19	27	
C18 - C20	70	143	8.8	8.8	80	4.6	41	37	<1	<1	<25	41
C21 - C23	44	110	5.5	4.7	36	<0.5	<1	<1	<1	<1	<5	30
C24 - C26	28	65	2.9	3.5	15	<0.5	<1	<1	<1	<1	<5	22
C27 - C29	15	30	1.4	1.3	5.3	<0.5	<1	<1	<1	<1	<5	33
C30 - C40	10	26	0.4	0.4			<1	<1	<1	<1	<5	5.1

Refinery code		17.00										
IVM LIMS nr		08/1139										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	0.5	0.3	0.5	3.7	5.8	2.5	0.9	0.1			
C12 - C14	0.3	5.6	2.3	2.5	25	25	2.7	6.4	4.1	3.9	3.4	
C15 - C17	4.7	8.4	0.7	0.7	21	0.7	1.4	1.7	3.4	3.0	2.9	
C18 - C20	2.2	9.6	0.7	0.7	11	<0.5	0.7	0.6	<1	<1	<5	1.1
C21 - C23	1.9	8.2	<0.03	0.2	5.5	<0.5	<1	<1	<1	<1	<5	1.4
C24 - C26	2.8	11.2	<0.03	<0.03	2.4	<0.5	<1	<1	<1	<1	<5	1.6
C27 - C29	3.7	11.9	<0.03	<0.03	0.9	<0.5	<1	<1	<1	<1	<5	8.2
C30 - C40	2.9	7.3	<0.05	<0.05			<1	<1	<1	<1	<5	0.6

Refinery code		21.00										
IVM LIMS nr		08/1037										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							647					
C9 - C11	0.1	1.5	<0.03	0.03	1.0	0.9	87	17	8.1			
C12 - C14	0.2	2.8	0.2	0.07	6.2	4.0	1.8	6.5	4.1	1.3	<1	
C15 - C17	1.2	1.2	0.4	0.4	5.2	1.1	2.5	0.5	0.9	0.8	<1	
C18 - C20	1.2	3.3	0.2	0.2	3.6	0.6	2.9	2.2	<1	<1	<5	0.9
C21 - C23	1.2	3.0	0.03	0.1	1.6	<0.5	<1	<1	<1	<1	<5	0.6
C24 - C26	1.9	2.0	<0.03	0.03	0.6	<0.5	<1	<1	<1	<1	<5	0.4
C27 - C29	1.2	0.9	0.05	0.05	<0.5	<0.5	<1	<1	<1	<1	<5	1.0
C30 - C40	0.8	0.7	<0.05	<0.05			<1	<1	<1	<1	<5	<0.5

Refinery code		21.01										
IVM LIMS nr		09/0111										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							3760					
C9 - C11	171	320	64	21	155	128	2588	901	956			
C12 - C14	439	730	65	64	458	365	327	487	641	24	210	
C15 - C17	298	814	40	40	221	22	337	103	43	15	130	
C18 - C20	251	636	23	23	134	<5	190	3.0	<50	<50	26	49
C21 - C23	139	388	13	11	55	<5	<50	<50	<50	<50	<500	37
C24 - C26	68	170	4.8	4.8	19	<5	<50	<50	<50	<50	<500	15
C27 - C29	36	60	3.2	2.8	7.2	<5	<50	<50	<50	<50	<500	34
C30 - C40	19	48	0.8	0.8			<50	<50	<50	<50	<500	2.7

Refinery code		21.02										
IVM LIMS nr		09/0076										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							179					
C9 - C11	109	156	11	11	87	56.7	309	62	156			
C12 - C14	437	437	64	39	255	141	106	106	50	16	94	
C15 - C17	469	698	53	53	361	27.9	188	43	109	20	123	
C18 - C20	450	921	43	43	261	13	192	3.4	<10	<10	<50	146
C21 - C23	317	667	29	32	168	<5	<10	<10	<10	<10	<50	172
C24 - C26	208	460	24	21	121	<5	<10	<10	<10	<10	<50	158
C27 - C29	127	259	18	15	63		<10	<10	<10	<10	<50	315
C30 - C40	81	163	5.7	5.7			<10	<10	<10	<10	<50	24

Refinery code		21.03										
IVM LIMS nr		09/0186										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							14					
C9 - C11	<0.3	<5	<0.3	<0.3	<5	<5	24	9.4	3.3			
C12 - C14	1.4	6.6	0.4	0.6	5.4	4.4	4.0	16	10	0.8	9.4	
C15 - C17	3.3	9.0	0.8	0.8	6.5	<5	9.1	36	7.0	0.4	<5	
C18 - C20	7.4	9.5	2.6	2.6	21	<5	10	1.5	<10	<10	<50	0.4
C21 - C23	18	25	1.4	4.0	23	<5	<10	<10	<10	<10	<50	2.1
C24 - C26	27	35	1.4	3.4	14	<5	<10	<10	<10	<10	<50	4.7
C27 - C29	18	19	2.2	1.9	4.6	<5	<10	<10	<10	<10	<50	6.0
C30 - C40	16	27	1.2	1.2			<10	<10	<10	<10	<50	0.9

Refinery code		23.00										
IVM LIMS nr		08/1162										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.5	0.5	0.01			
C12 - C14	0.04	0.3	<0.03	<0.03	<0.5	<0.5	0.5	1.1	1.0	0.2	1.2	
C15 - C17	0.2	0.3	<0.03	<0.03	0.7	<0.5	0.2	0.2	0.6	0.6	<1	
C18 - C20	0.4	0.6	0.04	0.04	1.8	0.4	0.4	0.1	<1	<1	<5	<0.5
C21 - C23	1.1	1.3	0.1	0.1	2.0	<0.5	<1	<1	<1	<1	<5	0.5
C24 - C26	2.4	3.3	0.07	<0.03	1.1	<0.5	<1	<1	<1	<1	<5	1.1
C27 - C29	1.5	2.5	0.2	0.09	0.6	<0.5	<1	<1	<1	<1	<5	6.0
C30 - C40	0.9	2.0	0.06	0.06			<1	<1	<1	<1	<5	<0.5

Refinery code		24.00										
IVM LIMS nr		08/1197										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	5.7	1.7	6.5			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.5	1.2	3.3	0.7	<1	
C15 - C17	0.7	1.4	<0.03	<0.03	2.2	<0.5	0.7	0.6	0.5	0.7	<1	
C18 - C20	1.0	3.0	<0.03	<0.03	3.2	0.3	0.5	0.2	<1	<1	<5	0.3
C21 - C23	1.0	5.4	<0.03	<0.03	0.3	<0.5	<1	<1	<1	<1	<5	0.7
C24 - C26	1.8	4.6	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.6
C27 - C29	1.2	2.5	<0.03	<0.03	0.3	<0.5	<1	<1	<1	<1	<5	3.5
C30 - C40	0.8	1.9	<0.05	<0.05			<1	<1	<1	<1	<5	0.4

Refinery code		24.02										
IVM LIMS nr		08/1127										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							734					
C9 - C11	32	61	5.5	3.4	22	19	241	76	60			
C12 - C14	193	273	20	15	129	94	85	79	116	9.4	17	
C15 - C17	257	356	22	22	146	15	116	39	27	5.3	25	
C18 - C20	208	404	14	14	113	5.3	66	2.5	<10	<10	<50	89
C21 - C23	181	303	10	14	63	<5	<10	<10	<10	<10	<50	38
C24 - C26	220	295	19	16	72	<5	<10	<10	<10	<10	<50	37
C27 - C29	152	230	14	16	50	<5	<10	<10	<10	<10	<50	155
C30 - C40	109	232	9.2	9.2			<10	<10	<10	<10	<50	24

Refinery code		24.03										
IVM LIMS nr		08/1138										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.9					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.8	0.1	0.001			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.2	0.3	0.03	0.004	<1	
C15 - C17	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.1	0.05	<1	0.02	<1	
C18 - C20	0.06	<0.5	<0.03	<0.03	<0.5	<0.5	0.02	0.01	<1	<1	<5	<0.5
C21 - C23	0.3	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	1.1	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.8	<0.5	<0.03	<0.03	<0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C30 - C40	0.6	<0.5	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		24.04										
IVM LIMS nr		08/1058										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							1.7					
C9 - C11	<0.03	0.3	<0.03	<0.03	<0.5	<0.5	5.1	1.9	0.2			
C12 - C14	<0.03	4.1	0.2	0.2	1.7	1.4	1.5	9.5	5.4	2.8	2.9	
C15 - C17	1.2	8.2	0.2	0.2	3.0	0.3	0.8	0.8	4.2	8.5	1.3	
C18 - C20	2.1	6.1	0.3	0.3	2.2	0.4	0.7	1.2	<2	<2	<10	<0.5
C21 - C23	2.8	6.3	0.4	<0.03	1.7	<0.5	<2	<2	<2	<2	<10	0.2
C24 - C26	6.7	5.7	0.2	0.07	0.8	<0.5	<2	<2	<2	<2	<10	0.5
C27 - C29	4.8	4.4	0.3	0.2	0.6	<0.5	<2	<2	<2	<2	<10	1.3
C30 - C40	2.8	4.5	0.2	0.2			<2	<2	<2	<2	<10	<0.5

Refinery code		25.00										
IVM LIMS nr		08/1163										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							<0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.5	0.4	0.01			
C12 - C14	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	0.5	0.6	0.4	0.2	<1	
C15 - C17	2.8	<0.5	<0.03	<0.03	0.4	<0.5	0.2	0.3	0.2	0.6	<1	
C18 - C20	0.3	0.5	0.03	0.03	0.6	<0.5	0.1	0.1	<1	<1	<5	<0.5
C21 - C23	0.6	1.8	<0.03	0.04	0.8	<0.5	<1	<1	<1	<1	<5	<0.5
C24 - C26	0.9	1.7	0.03	<0.03	0.5	<0.5	<1	<1	<1	<1	<5	<0.5
C27 - C29	0.9	0.8	0.03	0.03	<0.5	<0.5	<1	<1	<1	<1	<5	0.6
C30 - C40	0.7	0.6	<0.03	<0.03			<1	<1	<1	<1	<5	<0.5

Refinery code		27.03										
IVM LIMS nr		08/0979										
	normal paraffins	iso paraffins	n-CC_5	n-CC_6	mono naphthenes	di naphthenes	mono aromatics	naphthenics mono aromatics	di aromatics	naphthenics di aromatics	Poly aromatics	poly naphthenics
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8							0.8					
C9 - C11	<0.03	<0.5	<0.03	<0.03	<0.5	<0.5	1.7	0.6	0.3			
C12 - C14	0.1	0.6	0.03	0.03	0.9	2.6	0.4	0.9	0.8	0.7	3.5	
C15 - C17	0.07	0.9	0.03	0.03	2.2	1.4	3.7	2.5	0.6	1.7	9.4	
C18 - C20	<0.03	1.4	0.2	0.2	3.0	5.0	5.2	12	<1	<1	<30	2.2
C21 - C23	1.6	3.2	0.5	0.4	4.4	<0.5	<1	<1	<1	<1	<5	4.5
C24 - C26	2.6	4.9	<0.03	0.08	3.9	<0.5	<1	<1	<1	<1	<5	3.1
C27 - C29	1.6	3.2	0.1	0.1	1.1	<0.5	<1	<1	<1	<1	<5	17
C30 - C40	0.9	2.6	<0.05	<0.05			<1	<1	<1	<1	<5	0.6

Refinery code		28.01										
IVM LIMS nr		08/1140										
	normal	iso paraffins	$n\text{-}CC_5$	$n\text{-}CC_6$	mono	di naphthenes	mono	naphthenics	di aromatics	naphthenics	Poly	poly
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
C3 - C5												
C6 - C8												
C9 - C11	0.1	1.3	<0.03	<0.03	0.6	0.7	5.5	1.8	0.5			
C12 - C14	2.1	10	0.8	<0.03	16	40	3.5	8.9	10.7	1.9	3.9	
C15 - C17	13	6.9	5.6	5.6	69	68	8.3	37	<1	0.7	3.8	
C18 - C20	13	31	2.5	2.5	74	78	10	39	<1	<1	<5	19
C21 - C23	10	37	3.0	3.1	43	<0.5	<1	<1	<1	<1	<5	21
C24 - C26	10.2	36	<0.03	1.7	14	<0.5	<1	<1	<1	<1	<5	12
C27 - C29	5.8	15	0.5	0.3	4.4	<0.5	<1	<1	<1	<1	<5	28
C30 - C40	3.9	9.9	0.4	0.4			<1	<1	<1	<1	<5	1.2

ANNEX 13 OTHER ANALYTICAL RESULTS PER REFINERY

Refinery code	1.00				
IVM LIMS nr	09/0132				
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.03	<5	8	20	25

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.08	1.5	<3	11	11	31

Refinery code	2.00				
IVM LIMS nr	08/1136				
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.2	0.2	<0.2	0.8	1.2	0.3

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
230	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	<0.04	<5	<5	12	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.1	11	7.00	18	20	59

Refinery code	2.01				
IVM LIMS nr	08/1126				
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.2	0.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
5.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
11	<0.9	<5	<2	<5	<0.03	<5	12	28	27

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	2.5	3.00	19	19	46

Refinery code	2.03				
IVM LIMS nr	09/0130				
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.9	0.9	0.5

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
37	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	<5	2	<5	<0.03	<5	7	10	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.44	11	1	18	21	50

Refinery code		2.04			
IVM LIMS nr		08/1205			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
330	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	0.5	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
17	<1.0	<5	<2	<5	< 0.1	<5	6	10	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.09	< 1	1.00	5.5	11	34

Refinery code		3.00			
IVM LIMS nr		09/0131			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
62	56	8.90	43	169.9	32

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
22	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.91	<5	6	5	110

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
13	680	290	290	330	928

Refinery code		3.01			
IVM LIMS nr		08/1049			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
480	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	5.5	1.00	12	12	27

Refinery code		4.01			
IVM LIMS nr		08/1379			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.3	<0.2	<0.2	<0.2	0.3	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
na	na	na	na	na	na	na	na	na	na

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	na	na	na	na	na

Refinery code		5.00			
IVM LIMS nr		08/1403			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<2.0	<2.0	<2.0	<2.0	0	<2.0

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
570	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
na	na	na	na	na	na	na	na	na	na

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.1	< 1	<3	5.2	6.2	23

Refinery code		5.02			
IVM LIMS nr		08/0810			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
110	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<12	<3	<15	<6	18	<0.12	<15	24	36	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	1	1.00	15	16	46

Refinery code		5.03			
IVM LIMS nr		08/1206			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
130	210	12.00	900	1252	690

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<20.0	<10.0	<10.0	<10.0	42	<10.0	<2.0	<2.0	<2.0	<2.0	30	40	<4.0	<4.0	<4.0	<4.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	<5	4	<5	< 0.1	<5	<5	na	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
2.3	18	4.00	16	16	57

Refinery code		5.04			
IVM LIMS nr		08/1340			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
5.3	4.5	2.40	23	35.2	3.5

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
240	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
14	<1.0	<5	<2	<5	<0.03	<5	<5	9	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
3.2	9.2	8.00	15	18	98

Refinery code		5.04_2			
IVM LIMS nr		09/0162			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
160	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.29	5.3	6	14	18	55

Refinery code		5.05			
IVM LIMS nr		09/0032			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
160	41	2.10	130	333.1	3.4

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<10.0	<5.0	<5.0	<0.5	<5.0	<5.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
4	<1.0	<5	<2	<5	0.08	<5	12	34	47

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.3	19	10.00	17	20	43

Refinery code		5.06			
IVM LIMS nr		08/0916			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
11	19	2.30	28	60.3	1.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
470	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1	<5	<1	<5	<0.03	<5	<5	<1	14

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.12	< 1	4.00	7.2	7.9	< 10

Refinery code		5.08			
IVM LIMS nr		08/0953			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
230	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.06	<5	6	11	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.43	13	12.00	14	15	30

Refinery code		5.10			
IVM LIMS nr		08/0780			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<2.0	<2.0	<2.0	0	<2.0

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
62	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
24	<3	<15	<6	<15	<0.06	<15	<15	<15	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.14	17	<3	14	14	41

Refinery code		5.11			
IVM LIMS nr		08/0812			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.4	0.5	<0.2	2.5	3.4	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
6.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.07	<5	15	19	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.2	1.4	6.00	8.6	10	22

Refinery code		5.12			
IVM LIMS nr		09/0077			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.6	1	<0.2	2.4	4	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
5.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	2	<5	<0.02	<5	26	6	100

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.35	13	<3	12	12	26

Refinery code		5.15			
IVM LIMS nr		08/1247			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
8.1	5.7	<0.2	1	14.8	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
63	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	5.00	<2	5	<0.02	<5	<5	8	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.07	< 1	1.00	< 5	< 5	75

Refinery code		5.16			
IVM LIMS nr		09/0141			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0	<0.2	<0.2	<0.2	0.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
94	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1	<5	2	<5	0.05	<5	6	9	28

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.37	12	<3	21	23	49

Refinery code		6.01			
IVM LIMS nr		08/1330			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
11	<1.0	<5	3	<5	< 0.1	<5	<5	6	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	2.2	3.00	< 5	7	37

Refinery code		6.04			
IVM LIMS nr		09/0116			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
41	<1.0	<5	<2	<5	0.08	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.11	22	4.00	14	28	73

Refinery code		6.05			
IVM LIMS nr		08/0981			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<2.0	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
270	<0.5	270.00	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	<5	<0.04	<5	<5	<5	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	2.4	1.00	6.6	6.9	< 10

Refinery code		6.08N			
IVM LIMS nr		08/1336			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
13	<1.0	16.00	<2	<5	<0.02	<5	13	<5	57

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	8.2	8.00	10	10	44

Refinery code		6.08V			
IVM LIMS nr		08/1342			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.2	0.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
690	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
12	<1.0	<5	<2	<5	< 0.1	<5	<5	7	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	12	2.00	8.1	10	26

Refinery code		6.10			
IVM LIMS nr		09/0133			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	<5	<2	<5	0.81	<5	7	14	40

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
3.6	5.1	9	< 5	25	114

Refinery code		6.11			
IVM LIMS nr		08/1198			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
480	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
7	<1.0	<5	2	<5	< 0.1	<5	<5	8	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.05	1.4	1.00	17	19	48

Refinery code		6.12			
IVM LIMS nr		09/0088			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1	<0.2	<0.2	<0.2	1	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
38	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	6	<0.02	<5	<5	6	940

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.65	< 1	<3	16	17	25

Refinery code		6.14			
IVM LIMS nr		08/1386			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1400	<0.5	0.70	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	<5	<0.02	<5	26	<5	39

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	5.9	1.00	11	12	26

Refinery code		6.15			
IVM LIMS nr		08/0832			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	3	<5	<0.04	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	4.1	7.00	7.8	10	38

Refinery code		6.17			
IVM LIMS nr		09/0089			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.5	<0.2	<0.2	20	20.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
88	<0.5	<0.5	<0.5	1.8	<0.5	0.2	<0.1	<0.1	<0.1	0.2	0.4	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.04	<5	7	7	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.92	1.4	<3	11	13	75

Refinery code		6.18			
IVM LIMS nr		08/1335			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.7	0.3	<0.2	0.5	2.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	3	<5	<0.02	<5	11	9	45

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.28	1	2.00	12	15	45

Refinery code		6.22			
IVM LIMS nr		08/0782			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	0.4	<0.2	0.7	1.1	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
15	<3	<15	<6	<15	<0.06	<15	<15	<15	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.18	2.6	<3	15	15	50

Refinery code		6.23			
IVM LIMS nr		08/0989			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
26	50	11.00	71	158	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.5	<0.5	1.30	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	7	<0.04	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	< 1	1.00	8.5	8.9	27

Refinery code		6.24H			
IVM LIMS nr		08/1061			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
380	330	100.00	780	1590	120

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
170	<10.0	<10.0	<10.0	<10.0	<10.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<4.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
26	<1.0	<5	<2	<5	< 0.1	<5	6	18	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
7.6	54	240.00	160	180	505

Refinery code		6.24S			
IVM LIMS nr		08/1023			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
330	160	22.00	120	632	130

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	32.00	<0.5	<0.5	<0.5	1.3	<0.1	<0.1	1.8	1.2	0.2	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	<5	<2	7	< 0.1	<5	360	850	63

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.98	21	19.00	19	32	147

Refinery code		6.26			
IVM LIMS nr		09/0115			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
140	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.03	<5	26	6	80

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.11	1.2	4.00	7.1	10	17

Refinery code		6.27			
IVM LIMS nr		08/1024			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.03	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.13	12	3.00	13	18	46

Refinery code		7.00			
IVM LIMS nr		08/1373			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
160	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
21	<1.0	<5	<2	<5	<0.02	<5	15	7	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	1	1.00	8.2	9.2	29

Refinery code		7.01			
IVM LIMS nr		08/0972			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.2	0.4	<0.2	2.2	4.8	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.8	<0.5	<0.5	<0.5	<0.5	<0.5	5.3	<0.1	<0.1	0.6	<0.1	1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
13	<1.0	7.00	<2	<5	0.67	<5	71	170	77

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
2.1	5.8	5.00	11	23	53

Refinery code		7.03			
IVM LIMS nr		09/0158			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.11	13	2	7.2	7.4	19

Refinery code		8.01			
IVM LIMS nr		08/1060			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
39	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
4	<1.0	<5	<2	<5	< 0.1	<5	10	7	60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.18	1.4	1.00	6.3	7.3	29

Refinery code		8.02			
IVM LIMS nr		08/0918			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
350	<0.5	<0.5	<0.5	<0.5	<0.5	3.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
14	<1	<5	<1	<5	<0.03	<5	6	15	14

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	2.3	9.00	23	23	79

Refinery code		8.03			
IVM LIMS nr		08/1337			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
35	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
180	<1.0	<5	5	34	< 0.1	<5	74	110	110

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.17	27	2.00	14	14	18

Refinery code		8.04N			
IVM LIMS nr		08/1237			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
17000	2100	4500.00	2200	25800	1400

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1200	<5.0	<412.7	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
16	<1.0	<5	<2	<5	0.12	<5	<5	na	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
9.5	4.9	52.00	37	47	204

Refinery code		8.04S			
IVM LIMS nr		08/1236			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
70	10	1.90	23	104.9	6.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<0.9	<5	<2	<5	<0.02	<5	<5	na	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.19	< 1	1.00	< 5	6.9	24

Refinery code		8.07			
IVM LIMS nr		08/1341			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.5	0.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
420	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	31	63	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.18	1.9	4.00	5.2	11	38

Refinery code		8.09			
IVM LIMS nr		08/1407			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
9.2	18	2.40	20	49.6	1.4

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<16	<4	<20	<8	<20	<0.08	<20	<20	24	<80

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	1.4	<3	< 5	< 5	16

Refinery code		8.12			
IVM LIMS nr		09/0112			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
72	160	19.00	100	351	7.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	1.60	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
2	< 1	6.00	24	32	74

Refinery code		8.13			
IVM LIMS nr		08/1350			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.4	0.4	1.00	3.5	5.3	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
52	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
7	<1.0	<5	<2	<5	< 0.1	<5	25	16	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.7	6.9	5.00	6.1	9.2	36

Refinery code		8.14			
IVM LIMS nr		08/1329			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
8.2	4.8	0.40	1.7	15.1	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
150	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	1.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	9	25	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	< 1	1.00	5.9	7.6	33

Refinery code		8.16			
IVM LIMS nr		08/1410			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.5	0.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
92	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
15	<1.0	6.00	<2	<5	<0.02	<5	13	4	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.45	8.5	23.00	27	37	113

Refinery code		8.18D			
IVM LIMS nr		08/1408			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.4	7.4	3.40	22	35.2	7.9

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
50	<5.0	<5.0	<5.0	<5.0	<5.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
8	<1.0	<5	64	<5	0.11	<5	460	70	59

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
18	8.1	21.00	24	29	83

Refinery code		8.18F			
IVM LIMS nr		08/1409			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1	6.8	2.90	27	37.7	4.3

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2100	<5.0	<5.0	<5.0	<5.0	<5.0	5.9	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.02	<5	8	13	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
2.1	5.7	19.00	25	29	64

Refinery code		8.20			
IVM LIMS nr		08/1199			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
8	<1.0	<5	6	6	1.7	<5	440	1700	73

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.0	6.1	3.00	17	18	64

Refinery code		8.30			
IVM LIMS nr		09/0235			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2700	4400	790.00	2800	10690	620

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<50.0	<25.0	<79.5	<25.0	<25.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<10.0	<10.0	<10.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
8	<1.0	6	<2	<5	0.73	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
55	48	870	530	550	1920

Refinery code		9.00			
IVM LIMS nr		08/1372			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
97	<0.5	0.50	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	< 0.1	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	6.8	6.00	10	13	27

Refinery code		9.01			
IVM LIMS nr		08/1387			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.3	<0.2	<0.2	<0.2	0.3	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
230	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<0.9	6.00	<2	12	1.5	7	27	880	120

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.9	7	16.00	15	47	130

Refinery code		9.02			
IVM LIMS nr		09/0113			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
73	300	19.00	230	622	42

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
29	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
26	<1.0	<5	<2	<5	0.08	<5	27	26	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.5	29	43.00	32	41	132

Refinery code		9.03R			
IVM LIMS nr		08/1207			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	0.30	13	13.3	30

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
11	<0.9	<5	<2	<5	< 0.1	<5	7	na	30

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
4.7	< 1	24.00	45	47	194

Refinery code		9.04C			
IVM LIMS nr		09/0119			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.3	<0.2	<0.2	<0.2	0.3	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
22	<0.5	<0.5	<0.5	<0.5	4.2	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<8	<4	<10	<4	<10	<0.06	<10	20	14	<40

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.1	8.3	9.00	32	40	90

Refinery code		9.04R			
IVM LIMS nr		09/0118			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	5.3	<0.2	0.8	6.1	1.1

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.03	<5	6	7	37

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.54	1.2	4.00	< 5	5.4	< 10

Refinery code		9.11			
IVM LIMS nr		08/1137			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
500	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
4	<0.9	<5	5	<5	< 0.1	<5	11	<5	480

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.32	3.5	2.00	5.6	5.9	64

Refinery code		10.00			
IVM LIMS nr		08/1402			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
82	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.44	1.1	<3	16	16	33

Refinery code		10.02			
IVM LIMS nr		09/0061			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.3	0.3	1.1

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	17	0.06	<5	7	6	27

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.1	12	9.00	23	26	81

Refinery code		11.00			
IVM LIMS nr		08/0807			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.2	4.1	0.80	45	54.1	1

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
290	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<12	<3	<15	<6	24	<0.12	<15	<15	27	102

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
6.1	2.5	5.00	15	16	48

Refinery code		11.01			
IVM LIMS nr		08/0781			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
630	650	210.00	360	1850	68

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<100.0	<50.0	<50.0	<50.0	<50.0	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	<20.0	<20.0	<20.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
15	<3	<15	<6	18	<0.06	<15	48	63	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
21	83	93.00	40	40	143

Refinery code		11.02			
IVM LIMS nr		09/0034			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.4	7.6	1.20	6.4	16.6	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
10	<0.5	<0.5	<0.5	<0.5	<0.5	3.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	<5	0.04	<5	17	48	100

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.37	3.7	<3	13	14	39

Refinery code		11.03			
IVM LIMS nr		08/1022			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
210	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	< 0.1	<5	<5	7	20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.11	< 1	1.00	9.6	9.9	29

Refinery code		11.04			
IVM LIMS nr		08/0917			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.3	0.8	<0.2	0.5	1.6	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1	<5	2	<5	<0.03	<5	18	45	31

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.46	2.2	7.00	18	30	67

Refinery code		11.05			
IVM LIMS nr		08/0811			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.1	0.8	<0.2	0.3	2.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	<5	2	<5	<0.04	<5	40	45	21

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.12	1.2	1.00	11	16	56

Refinery code		11.06			
IVM LIMS nr		09/0094			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
70	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	5	0.06	<5	16	13	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	< 1	4.00	33	33	73

Refinery code		11.07			
IVM LIMS nr		08/0808			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	0.4	0.30	<2.0	0.7	0.3

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
81	<0.5	<0.5	<0.5	<0.5	<0.5	3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<12	<3	<15	<6	39	<0.15	<15	138	78	249

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.59	23	14.00	28	28	82

Refinery code		11.09			
IVM LIMS nr		09/0079			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.7	2.8	<0.2	2	7.5	2.6

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.2	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.1	<0.1	<0.1	<0.1	0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
20	40	44.00	<8	20	0.16	<20	48	96	188

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
4.5	6	15.00	32	33	130

Refinery code		12.00			
IVM LIMS nr		08/1204			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2400	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.03	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	1.7	4.00	12	13	50

Refinery code		12.01			
IVM LIMS nr		09/0121			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.4	<0.2	<0.2	<0.2	0.4	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.02	<5	<5	5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.24	< 1	1	12	12	29

Refinery code		12.02			
IVM LIMS nr		08/1203			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.6	1.3	0.70	8.8	11.4	0.4

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	< 0.1	<5	<5	7	29

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.48	6.5	4.00	15	17	54

Refinery code		12.03			
IVM LIMS nr		08/1344			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
43	36	5.70	40	124.7	5.5

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
630	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	<0.02	<5	<5	7	27

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.07	9.5	11.00	20	30	60

Refinery code		12.04			
IVM LIMS nr		08/1374			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.8	1.7	0.20	7.5	12.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.03	<5	<5	6	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.56	4.6	4.00	14	20	105

Refinery code		13.00 A			
IVM LIMS nr		08/0776			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
78	110	8.60	55	251.6	<4.0

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
190	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
18	<3	<15	<6	<15	<0.09	<15	<15	18	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.1	3.1	4.00	< 5	< 5	<10

Refinery code		13.00 B			
IVM LIMS nr		08/0777			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.6	4.5	<4.0	<4.0	9.1	<4.0

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
230	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
18	<3	<15	<6	<15	<0.09	<15	<15	21	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.26	< 1	<3	< 5	< 5	<10

Refinery code		13.01			
IVM LIMS nr		09/0117			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
10	1.4	<0.2	10	21.4	0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.35	<5	6	10	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.6	3.4	4.00	15	20	54

Refinery code		13.02N			
IVM LIMS nr		08/0842			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.3	0.7	<0.2	0.3	1.3	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.04	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.06	2.4	1.00	7.1	7.5	34

Refinery code		13.02R			
IVM LIMS nr		08/1200			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
140	52	5.80	34	231.8	36

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
4.9	<0.5	<3.4	<0.5	<0.5	<0.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	9	11	0.47	12	10	15	44

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
16	30	30.00	30	50	232

Refinery code		13.02S			
IVM LIMS nr		08/0841			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
250	47	<4.0	120	417	5.1

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<20.0	<9.9	<10.0	<9.9	<9.9	<9.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<4.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	<0.06	<5	7	6	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
2.6	1.3	3.00	9.2	11	29

Refinery code		13.04			
IVM LIMS nr		09/0159			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
7000	5600	300.00	2600	15500	310

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2800	<5.0	150	<5.0	<5.0	<5.0	2.5	<1.0	<1.0	<1.0	<1.0	1.6	<2.0	<2.0	<2.0	<2.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	7	9.7	8	<5	<5	67

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
21	14	140	90	110	347

Refinery code		13.05			
IVM LIMS nr		08/1036			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
140	<0.5	<0.5	<0.5	<0.5	<0.5	5.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<0.8	<4	<2	<4	< 0.1	<4	5	10	<16

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.19	1.7	2.00	21	22	59

Refinery code		13.07			
IVM LIMS nr		08/0778			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.4	4.1	<0.2	37	43.5	1.4

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
21	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	1.4	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
18	<3	<15	<6	<15	<0.3	<15	102	15	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
6.6	6.6	8.00	27	34	82

Refinery code		13.10			
IVM LIMS nr		08/1038			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.4	3.2	0.90	11	16.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
290	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
4	<0.8	<4	<2	<4	< 0.1	<4	<4	10	33

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	< 1	1.00	8.2	8.3	25

Refinery code		13.11			
IVM LIMS nr		08/1343			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
360	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
4	<1.0	<5	<2	<5	< 0.1	<5	<5	16	28

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.16	< 1	1.00	6.2	10	29

Refinery code		13.12			
IVM LIMS nr		08/1059			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
17	<0.5	<0.5	<0.5	<0.5	<0.5	3.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	<1.0	6.00	<2	6	< 0.1	<5	8	8	450

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	< 1	4.00	7	8.6	34

Refinery code		13.13			
IVM LIMS nr		08/1382			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.4	1.3	0.90	41	43.6	2.4

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
5.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
9	<0.8	<4	<2	<4	0.13	<4	11	12	40

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
24	31	17.00	35	78	218

Refinery code		13.14			
IVM LIMS nr		08/1349			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
14	12	8.00	40	74	4.7

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
200	<0.5	<0.5	<0.5	<0.5	<0.5	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	< 0.1	<5	<5	<5	63

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
8.7	15	130.00	95	120	391

Refinery code		14.00			
IVM LIMS nr		09/0052			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	1	1	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
78	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
7	<0.9	6.00	<2	<5	0.06	<5	6	7	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.18	10	5.00	11	14	29

Refinery code		14.01			
IVM LIMS nr		09/0120			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
220	150	2.00	430	802	120

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.9	<0.5	<5.4	<0.5	2.1	<0.5	<0.1	<0.1	<0.1	<0.1	1.1	0.3	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	<0.02	<5	12	38	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.4	5.1	42	29	29	90

Refinery code		15.01			
IVM LIMS nr		09/0122			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2.1	0.9	<0.2	0.2	3.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
3.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.04	<5	5	20	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.45	26	3	11	13	41

Refinery code		16.00			
IVM LIMS nr		08/0809			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
560	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	<0.1	<0.1	<0.1	<0.1	5.3	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<12	<3	<15	<6	21	<0.3	<15	45	<15	<60

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.8	16	4.00	9.7	12	52

Refinery code		17.00			
IVM LIMS nr		08/1139			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
68	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
21	<1.0	<5	<2	<5	0.2	<5	<5	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.07	1.6	4.00	9.6	18	37

Refinery code		21.00			
IVM LIMS nr		08/1037			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
580	2.2	9.90	55	647.1	3.9

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
3.5	<0.5	8.20	<0.5	<0.5	<0.5	0.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
13	<0.9	<5	<2	<5	< 0.1	<5	7	<5	73

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.08	9.5	5.00	16	16	52

Refinery code		21.01			
IVM LIMS nr		09/0111			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
26	1800	34.00	1900	3760	19

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
3.1	<0.5	0.80	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
21	<1.0	<5	<2	5	0.15	<5	6	6	44

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
28	9.6	19.00	21	32	78

Refinery code		21.02			
IVM LIMS nr		09/0076			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
73	67	<20.0	39	179	180

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<20.0	<20.0	<20.0	<20.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	0.29	6	19	8	200

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
12	4.7	57.00	44	49	216

Refinery code		21.03			
IVM LIMS nr		09/0186			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
6.5	1.9	0.60	5.0	14	1.6

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	19	<0.5	<0.1	<0.1	<0.1	<0.1	0.3	0.4	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
7	<1.0	<5	<2	<5	<0.02	<5	8	8	67

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.55	3.3	<3	20	25	65

Refinery code		23.00			
IVM LIMS nr		08/1162			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	25.00	<2	<5	<0.03	<5	10	18	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	1.1	3.00	16	19	43

Refinery code		24.00			
IVM LIMS nr		08/1197			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
3.8	<0.5	3.20	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
6	<1.0	<5	<2	<5	< 0.1	<5	17	36	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.05	1.8	3.00	21	22	62

Refinery code		24.02			
IVM LIMS nr		08/1127			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
130	320	54.00	230	734	<10.0

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1200	<25.0	<25.0	<25.0	<25.0	<25.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<10.0	<10.0	<10.0

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
40	<1.0	8.00	<2	8	< 0.1	15	7	27	91

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
9.7	4.2	24.00	30	41	162

Refinery code		24.03			
IVM LIMS nr		08/1138			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.9	<0.2	<0.2	<0.2	0.9	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<1.0	<5	<2	<5	< 0.1	<5	14	<5	<20

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	6.6	10.00	19	30	30

Refinery code		24.04			
IVM LIMS nr		08/1058			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
0.2	<0.2	<0.2	<0.2	0.2	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	<5	<0.03	<5	<5	<5	<18

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.08	1.6	3.00	14	19	50

Refinery code		25.00			
IVM LIMS nr		08/1163			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	<0.2	0	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
<4	<0.9	<5	<2	<5	< 0.1	<5	11	3	24

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
<0.05	5.5	7.00	5.1	7.5	31

Refinery code		27.03			
IVM LIMS nr		08/0979			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<20.0	0.2	<0.2	0.6	0.8	0.7

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2500	<0.5	3.80	<0.5	<0.5	<0.5	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
5	1.6	<5	3	<5	<0.04	<5	16	7	110

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
0.14	3.6	1.00	18	20	59

Refinery code		28.01			
IVM LIMS nr		08/1140			
Benzene	Toluene	Ethylbenzene	Xylenes (sum o,m,p)	Sum BTEX	Naphthalene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
<0.2	<0.2	<0.2	0.5	0.5	<0.2

Dichloromethane	1,1-dichloroethane	1,2-dichloroethane	1,2-dichloroethene (trans)	1,2-dichloroethene (cis)	1,2-dichloropropane	trichloromethane	tetrachloormethane	1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethene	tetrachloroethene	monochlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2

As	Cd	Cr	Co	Cu	Hg	Pb	Ni	V	Zn
µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
12	<0.9	<5	<2	<5	< 0.1	<5	11	52	24

OiW	Kjedahl N	BOD	DOC	TOC	COD
mg/l	mg N/l	mg/l	mg C/l	mg C/l	mg/l
1.1	2.5	3.00	16	17	78

CONCAWE
Boulevard du Souverain 165
B-1160 Brussels
Belgium

Tel: +32-2-566 91 60
Fax: +32-2-566 91 81
e-mail: info@concawe.org
website: http://www.concawe.org