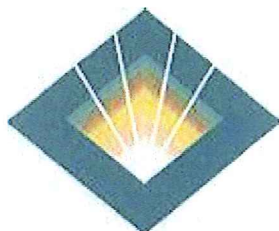


Material Safety Data Sheet

Marine Fuel Oil

NFPA: Flammability



TESORO

HMIS III:

HEALTH	1
FLAMMABILITY	2
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Marine Fuel Oil			
Synonyms	:	Black Fuel Oil, MFO, Industrial Fuel Oil, 6 Oil, Slurry Fuel Oil, IFO-380, RFO, Refinery Fuel Oil, High Sulfur Fuel Oil, HSFO, IF 180, IF 380, Bunker C, Bunker Fuel Oil, Decant Oil, Utility Fuel Oil, 888100008793			
MSDS Number	:	888100008793	Version	:	1.14
Product Use Description	:	Fuel, Intermediate Stream			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	Chemtrec (Emergency Contact)	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Regulatory status	: This material is considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).
Signal Word	: WARNING
Hazard Summary	: Combustible Liquid Slight to moderate irritant. Affects central nervous system. Skin cancer hazard. Hot liquid may cause thermal burns.

Potential Health Effects

Eyes	: May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.
Skin	: May cause skin irritation with prolonged or repeated contact. Practically non-toxic if absorbed following acute (single) exposure. Exposure may cause a phototoxicity reaction: liquid or mist on the skin may produce a painful sunburn reaction when exposed to sunlight. Product may be hot which could cause 1st, 2nd, or 3rd degree thermal burns.
Ingestion	: This material has a low order of acute toxicity. If large quantities are ingested, nausea, vomiting and diarrhea may result. Ingestion may also cause effects similar to inhalation of the product. Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.
Inhalation	: Because of its low vapor pressure, this product presents a minimal inhalation

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

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hazard at ambient temperature. Upon heating, fumes may be evolved. Inhalation of fumes or mist may result in respiratory tract irritation and central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death. The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death. Irritating and toxic hydrogen sulfide gas may be present. Greater than 15 - 20 ppm continuous exposure can cause mucous membrane and respiratory tract irritation. 50 - 500 ppm can cause headache, nausea, and dizziness. Continued exposure at these levels can lead to loss of reasoning and balance, difficulty in breathing, fluid in the lungs, and possible loss of consciousness. Greater than 500 ppm can cause rapid unconsciousness due to respiratory paralysis and death by suffocation unless the victim is removed from exposure and successfully resuscitated. Greater than 1000 ppm can cause immediate unconsciousness and death if not promptly revived. After-effects from overexposure are not anticipated except what would be expected if the victim was without oxygen for more than 3 to 5 minutes (asphyxiation). The "rotten egg" odor of hydrogen sulfide is not a reliable indicator for warning of exposure, since olfactory fatigue (loss of smell) readily occurs, especially at concentrations above 50 ppm. At high concentrations, the victim may not even recognize the odor before becoming unconscious.

Chronic Exposure

: Similar products produced skin cancer and skin tumors in laboratory animals following repeated applications. The significance of these results to human exposures has not been determined - see Section 11, Toxicological Information. Petroleum industry experience indicates that a program providing for good personal hygiene, proper use of personal protective equipment, and minimizing the repeated and prolonged exposure to liquids and fumes, as outlined in this MSDS, is effective in reducing or eliminating the carcinogenic risk of high boiling aromatic oils (polynuclear aromatic hydrocarbons) to humans.

Target Organs

: Skin, Eyes, Central nervous system

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	100%
Polycyclic aromatic compounds (PACs or PNAs)		Typically 1.5%
Benzo[a]pyrene; Benzo[def]chrysene	50-32-8	Trace to 0.2%
Hydrogen Sulfide	7783-06-4	Trace to 0.2%
Sulfur	17704-34-9	Trace to 4.5%

SECTION 4. FIRST AID MEASURES**Inhalation**

: Move to fresh air. Give oxygen. If breathing is irregular or stopped, administer artificial respiration. Seek medical attention immediately.

Skin contact

: Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

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	persists, call a physician.
Eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
Ingestion	: Do NOT induce vomiting. Do not give liquids. Seek medical attention immediately. If vomiting does occur naturally, keep head below the hips to reduce the risks of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.
Notes to physician	: Symptoms: Dizziness, Discomfort, Headache, Nausea, Disorder, Vomiting, Liver disorders, Kidney disorders, Aspiration may cause pulmonary edema and pneumonitis.

SECTION 5. FIRE-FIGHTING MEASURES

Form	: Liquid
Flash point	: 65.5°C (150°F) Minimum
Suitable extinguishing media	: Carbon dioxide (CO ₂), Water spray, Dry chemical, Foam, Keep containers and surroundings cool with water spray.
Specific hazards during fire fighting	: Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.
Special protective equipment for fire-fighters	: Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.
Further information	: Flammable vapor production at ambient temperature in the open is expected to be minimal, as the material is generally wet. However, depending on oil content and conditions, it is possible flammable vapors could accumulate in the headspace of storage containers, presenting a flammability and explosion hazard. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to contain spill areas.
Environmental precautions	: Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material.
Methods for cleaning up	: Take up with sand or oil absorbing materials. Carefully vacuum, shovel, scoop or sweep up into a waste container for reclamation or disposal.

SECTION 7. HANDLING AND STORAGE

Handling	: Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.
Advice on protection against fire and explosion	: Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initiated fire or explosion during transfer, storage or handling, include but are not limited to these examples: (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators. (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha). (3) Storage tank level floats must be effectively bonded. For more information on precautions to prevent static-initiated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).
Dust explosion class	: Not applicable
Requirements for storage areas and containers	: Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks". Hydrogen sulfide may accumulate in tanks and bulk transport compartments. Consider appropriate respiratory protection (see Section 8). Stand upwind. Avoid vapors when opening hatches and dome covers. Confined spaces should be ventilated and gas tested prior to entry.
Advice on common storage	: Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.
Other data	: No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure Guidelines**

List	Components	CAS-No.	Type:	Value
OSHA	Polycyclic aromatic compounds (or coal tar pitch volatiles – benzene soluble)		PEL	0.2 mg/m3
	Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	PEL	5 mg/m3 (as mineral oil mist)

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	Hydrogen Sulfide	7783-06-4	STEL	20 ppm
ACGIH	Hydrogen Sulfide	7783-06-4	TWA	1 ppm
		7783-06-4	STEL	5 ppm
	Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	TWA	0.2 mg/m3 (as mineral oil) Sum of 15 NTP-listed polynuclear aromatic hydrocarbons 0.005 mg/m3
	Polycyclic aromatic compounds (or coal tar pitch volatiles – benzene soluble)		TWA	0.2 mg/m3

- Engineering measures** : Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.
- Eye protection** : Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.
- Hand protection** : Gloves constructed of nitrile, neoprene, or PVC are recommended.
- Skin and body protection** : Chemical protective clothing such as DuPont Tyvek QC, TyChem® or equivalent, recommended based on degree of exposure. The resistance of specific material may vary from product to product as well as with degree of exposure.
- Respiratory protection** : If hydrogen sulfide concentration may exceed permissible exposure limit, a positive-pressure SCBA or Type C supplied air respirator with escape bottle is required as respiratory protection. If hydrogen sulfide concentration is below H₂S permissible exposure limit a NIOSH/ MSHA-approved air-purifying respirator with acid gas cartridges may be acceptable for odor control, but continuous air monitoring for H₂S is recommended. Protection provided by air-purifying respirators is limited. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.
- Work / Hygiene practices** : Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Form** : Liquid
- Appearance** : Dark brown to black

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

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Odor	: Petroleum asphalt odor
Flash point	: 65.5 °C (150 °F) Minimum
Thermal decomposition	: No decomposition if stored and applied as directed.
pH	: Not applicable
Boiling point	: 343 - 538 °C (649 - 1,000 °F)
Vapor Pressure	: 1.33 hPa at 37.78 °C (100.00 °F)
Density	: 1.01 - 1.1 g/cm ³
Water solubility	: Insoluble
Percent Volatiles	: 100 %
Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)	Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products.

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Keep away from strong oxidizers.
Materials to avoid	: Strong oxidizing agents. Peroxides.
Hazardous decomposition products	: Carbon monoxide, carbon dioxide and noncombusted hydrocarbons (smoke).
Thermal decomposition	: No decomposition if stored and applied as directed.
Hazardous reactions	: Keep away from oxidizing agents, and acidic or alkaline products.

SECTION 11. TOXICOLOGICAL INFORMATION**Carcinogenicity**

NTP	: Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)
IARC	: Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)
OSHA	: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
CA Prop 65	: WARNING! This product contains a chemical known to the State of California to cause cancer. Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)
Skin irritation	: Irritating to skin.
Eye irritation	: Irritating to eyes.
Further information	: This material contains polynuclear aromatic hydrocarbons (PNAs), some of which are animal carcinogens. Studies have shown that similar products produce skin cancer or skin tumors in

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

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laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

The presence of carcinogenic PNAs indicates that precautions should be taken to minimize repeated and prolonged inhalation of fumes or mists.

Dermal application of gas oil to rats resulted in limited evidence of liver damage (i.e., increased liver weight and changes in hepatic serum enzyme activity) and bone marrow toxicity (hypoplasia and decreased hemoglobin.)

Liver and kidney injuries may occur.

Components of the product may affect the nervous system.

Component:

Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil 64741-62-4

Acute oral toxicity: LD50 rat
Dose: 4,320 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: 2,001 mg/kg

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Carcinogenicity: Animal experiments showed a statistically significant number of tumors.

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Consult federal, state and local waste regulations to determine appropriate waste characterization of material and allowable disposal methods.

SECTION 14. TRANSPORT INFORMATION**CFR**

Proper shipping name : Elevated temperature liquid, n.o.s.
UN-No. : 3257 (UN1993 if material at room temperature)
Class : 9
Packing group : III
Hazard inducer : (Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)

TDG

Proper shipping name : Elevated temperature liquid, n.o.s.
UN-No. : UN3257
Class : 9
Packing group : III
Hazard inducer : (Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)

IATA Cargo Transport

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

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UN-No. : UN3257
 Class : 9
 Not permitted for transport

IATA Passenger Transport

UN-No. : UN3257
 Class : 9
 Not permitted for transport

IMDG-Code

UN-No. : UN 3257
 Description of the goods : Elevated temperature liquid, n.o.s.
 (Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)
 Class : 9
 Packaging group : III
 IMDG-Labels : 9
 EmS Number : F-A S-P
 Marine pollutant : No

SECTION 15. REGULATORY INFORMATION**CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)**

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

OSHA Hazards : Combustible Liquid
 Moderate skin irritant
 Moderate eye irritant
 Probable carcinogen

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
 Acute Health Hazard
 Chronic Health Hazard

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

<u>Components</u>	<u>CAS-No.</u>
-------------------	----------------

Benzo[a]pyrene; Benzo[def]chrysene	50-32-8
---	---------

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR355, Appendix A)

<u>Components</u>	<u>CAS-No.</u>
-------------------	----------------

PENN RTK US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

<u>Components</u>	<u>CAS-No.</u>
-------------------	----------------

Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4
--	------------

Benzo[a]pyrene; Benzo[def]chrysene	50-32-8
---	---------

MATERIAL SAFETY DATA SHEET Marine Fuel Oil

Page 9 of 9

MASS RTK US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

<u>Components</u>	<u>CAS-No.</u>
Benzo[a]pyrene; Benzo[def]chrysene	50-32-8

NJ RTK US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

<u>Components</u>	<u>CAS-No.</u>
Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4
Benzo[a]pyrene; Benzo[def]chrysene	50-32-8

California Prop. 65 : WARNING! This product contains a chemical known in the State of California to cause cancer.

Benzo[a]pyrene; 50-32-8
Benzo[def]chrysene

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Template : GWU mbH
Prepared by Birkenbacher Str. 18
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Revision Date : 02/10/2011

47, 48, 49, 50, 53, 54, 55, 56, 57, 58, 59, 65, 66, 114, 115, 121, 125, 126, 127, 128, 283, 284, 293, 295, 296, 315, 346, 347, 348, 349, 350, 351, 352, 353, 355, 1002, 1003, 1004, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1022, 1023, 1024, 1025, 1026, 1028, 1029, 1030, 1031, 1033, 1034, 1035, 1036, 1054, 1586, 1858, 1886



Sakkunnigutlåtande

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11

Kustbevakningen
Gunnar Persson
Box 5200
426 05 VÄSTRA FRÖLUNDA

INKOM
KUSTBEVAKNINGEN

2011 -10- 0 6

Kopia till:

Kustbevakningen REGIONLEDNING Sydvest
Centrala ledningen Dnr *Gunnar P*
Box 536
371 23 KARLSKRONA

Uppdragsgivare

Kustbevakningen Regionledning Väst, Västra Frölunda.

Allmän information om SKL:s sakkunnigutlåtanden

Återgivande av sakkunnigutlåtande

Vid återgivande av denna redovisning ska detta i normalfallet göras i sin helhet. Om utdrag ur redovisningen återges i annat dokument ska detta följas av en tydlig hänvisning till ursprungsdokumentet.

Standardförfarande och metoder

Standardförfarande (SF) och metoder (M) markerade med asterisk * ingår i laboratoriets ackreditering enligt ISO/IEC 17025. För förklaring av kortkoderna för använda standardförfaranden och metoder hänvisas till laboratoriets hemsida på IntraPolis eller Internet. Önskas mer information kontakta ärendansvarig.

Utlåtandeskala

För information om utlåtandeskalan, se sista sidan.



Sakkunnigutlåtande

Bilaga 2
2 (8)

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11

Material, metodik och materialhantering

Beteckning	Undersökningsmaterial
1	Olja i en glasburk, märkt bl.a.: "GOLDEN TRADER FUEL OIL TANK 19" Uppdragsgivarens beteckning: Tank 19 SKL:s materialnr: 201101369401 Materialhantering: Materialet destrueras 2012-04-04 Metodik: KT-SF07*, KT-SF22*, KT-M21*, KT-M22*
2	Olja i en glasburk, märkt bl.a.: "GOLDEN TRADER FUEL OIL 20" Uppdragsgivarens beteckning: Tank 20 SKL:s materialnr: 201101369402 Materialhantering: Materialet destrueras 2012-04-04 Metodik: KT-SF07*, KT-SF22*, KT-M21*
051568	Olja och lite vatten i en glasburk, märkt: " ☒ Utsläpp ☐ Ref.prov Datum för provtagning: 2011-09-15 Bedömt datum f. utsläpp: Provtagningsplats: N 58 01,8195 E 11 30,2565 Misstänkt fartyg: TEMP Vatten °C: 16 Luft °C: 15 Uppgifter om utsläpp: Tjockolja i vatten och på land 700-5000 liter PROVTAGARE Namn: Sabina Hansson KBV-enhet: 428/051 Säkerhetspåse: 051568" Uppdragsgivarens beteckning: 051568 SKL:s materialnr: 201101369403 Materialhantering: Materialet destrueras 2012-04-04 Metodik: KT-SF07*, KT-SF22*, KT-M21*, KT-M22*
053571	Olja och lite vatten i en glasburk, märkt: " ☒ Utsläpp ☐ Ref.prov Datum för provtagning: 2011-09-16 Bedömt datum f. utsläpp: ? Provtagningsplats: Tjörns kommun Härön N 58 01,02 E 11 28,81 Misstänkt fartyg: ? TEMP Vatten °C: 16 Luft °C: 18 Uppgifter om utsläpp: Crude oil (ca 100 x 100 m) PROVTAGARE Namn: Gunnar Philipsson KBV-enhet: 307 Säkerhetspåse: 053571"



Sakkunnigutlåtande

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11

Uppdragsgivarens beteckning: 053571
SKL:s materialnr: 201101369404
Materialhantering: Materialet destrueras 2012-04-04
Metodik: KT-SF07*, KT-SF22*, KT-M21*, KT-M22*

Ändamål

Ändamålet är att undersöka om oljespillproverna 051568 och 053571 är identiska med oljeprovorna 1 och 2 från fartyget GOLDEN TRADER.

Undersökningsrelaterad information

Oljeprovorna 1 och 2 (från fartyget GOLDEN TRADER) inkom till laboratoriet, genom Kustbevakningens försorg, från Danmark. Oljeprovorna var förpackade utan säkerhetspåse. Oljespillproverna 051568 och 053571 inkom i obrutna säkerhetspåsar.

Enligt önskemål från uppdragsgivaren Gunnar Persson har etiketten på oljeprovorna 1 och 2 och även transporttuben av papp dokumenterats med foto, se sidorna 5, 6 och 7.

Undersökning

Vid undersökningen framkom att de två oljespillproverna och oljeprovorna 1 och 2 från fartyget GOLDEN TRADER var mineraloljor.

Vid den jämförande undersökningen påvisades mellan oljespillproverna 051568 och 053571 och oljeprovet 1 (från fartyget GOLDEN TRADER) endast små skillnader som kan förklaras med vädringseffekter.

Vidare framkom att oljespillproverna 051568 och 053571 tydligt avvek från oljeprovet 2 (från fartyget GOLDEN TRADER). Skillnaderna som iaktogs mellan oljespillproverna och oljeprovet 2 kan inte förklaras med vädringseffekter.

Slutsats

Resultaten talar extremt starkt för att oljespillproverna 051568 och 053571 i utsläppsgenblicket var identiska med oljeprovet 1 (från fartyget GOLDEN TRADER) (*Grad +4*).

Resultaten talar extremt starkt för att oljespillproverna 051568 och 053571 inte är identiska med oljeprovet 2 (från fartyget GOLDEN TRADER) (*Grad -4*).

**Sakkunnigutlåtande**

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11

Handläggning

Undersökning	Handläggare
Olja	förste forensikern Tomas Myhrinder (ansvarig handläggare) forensikern Magnus Källberg

Frågor riktas i första hand till förste forensikern Tomas Myhrinder (ärendansvarig), direkttelefon 010-562 82 59. Eventuell kallelse till rättegång ställs till den ansvarige handläggaren för berörd undersökningstyp.

Tomas Myhrinder
Förste forensiker



Sakkunnigutlåtande

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11



Oljeprov 1, vy 1



Oljeprov 1, vy 2

IDENTIFICATIONNUMBER:	9/9 R1830
NAME OF VESSEL:	GOLDEN TRADER
IMO-NUMBER:	
POSITION:	
PLACE ON BOARD FOR SAMPLING:	FUEL OIL TANK
SIGNED BY SAMPLER:	Ch. Eng Vestkysten
SIGNED BY CAPTAIN OR CHIEF ENGINEER:	
NSN 9905-22-608-6294	

Oljeprov 1, etikett



Sakkunnigutlåtande

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11



Oljeprov 2, vy 1



Oljeprov 2, vy 2

IDENTIFICATIONNUMBER:	9/9 kl 1800
NAME OF VESSEL:	GOLDEN TRADER
IMO-NUMBER:	
POSITION:	
PLACE ON BOARD FOR SAMPLING:	FUEL OIL R 20 PE side
SIGNED BY SAMPLER:	John Dargaud
SIGNED BY CAPTAIN OR CHIEF ENGINEER:	M. S. V. G. R. N. / V
NSN 9905-22-608-6294	

Oljeprov 2, etikett

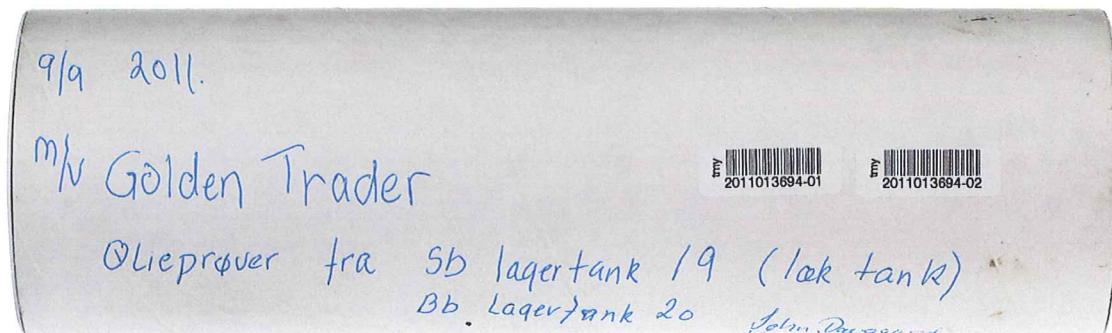


Sakkunnigutlåtande

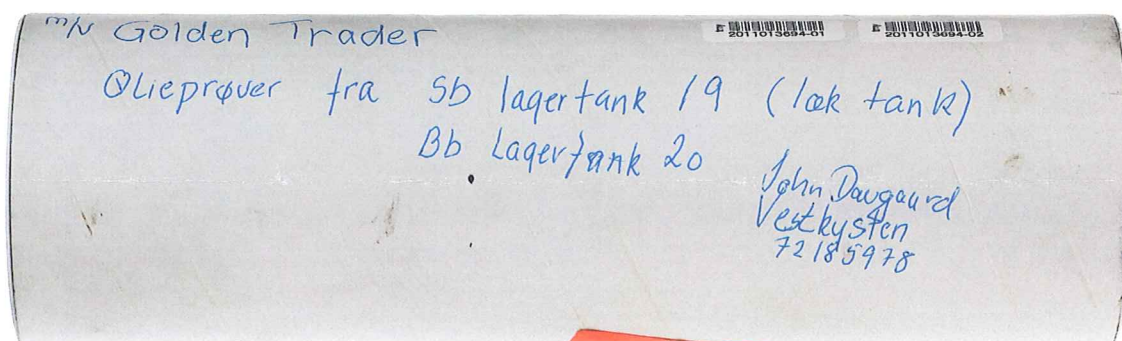
Bilaga 2
7 (8)

Datum
2011-10-04
Ert datum
2011-09-20

Vårt diarienummer
2011013694
Er beteckning
R708V-376-11



Transporttub av papp, vy 1



Transporttub av papp, vy 2



Transporttub av papp, vy 3



Sakkunnigutlåtande

Bilaga 2
8 (8)

Datum
2011-10-04
Ert datum
2011-09-20

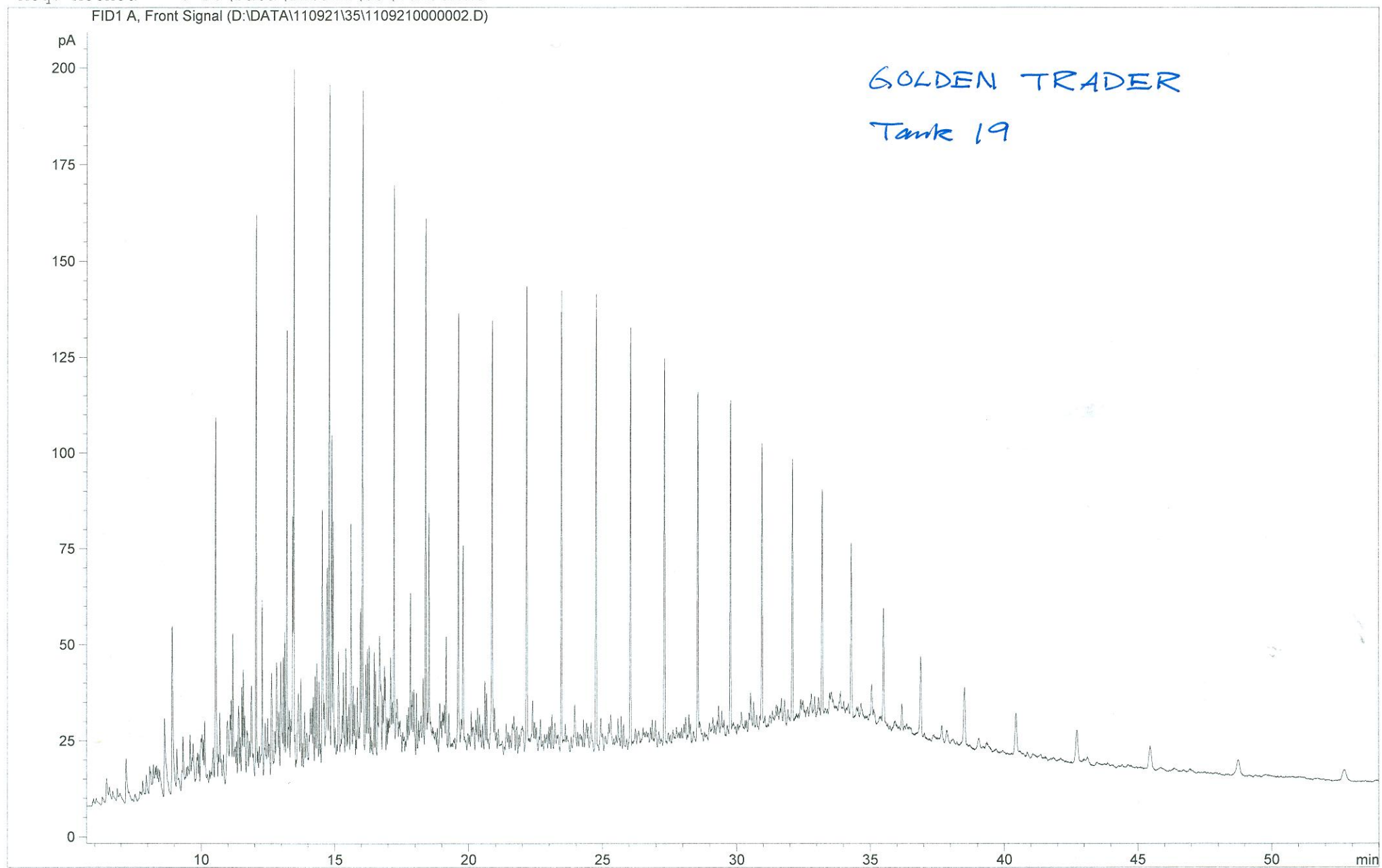
Vårt diarienummer
2011013694
Er beteckning
R708V-376-11

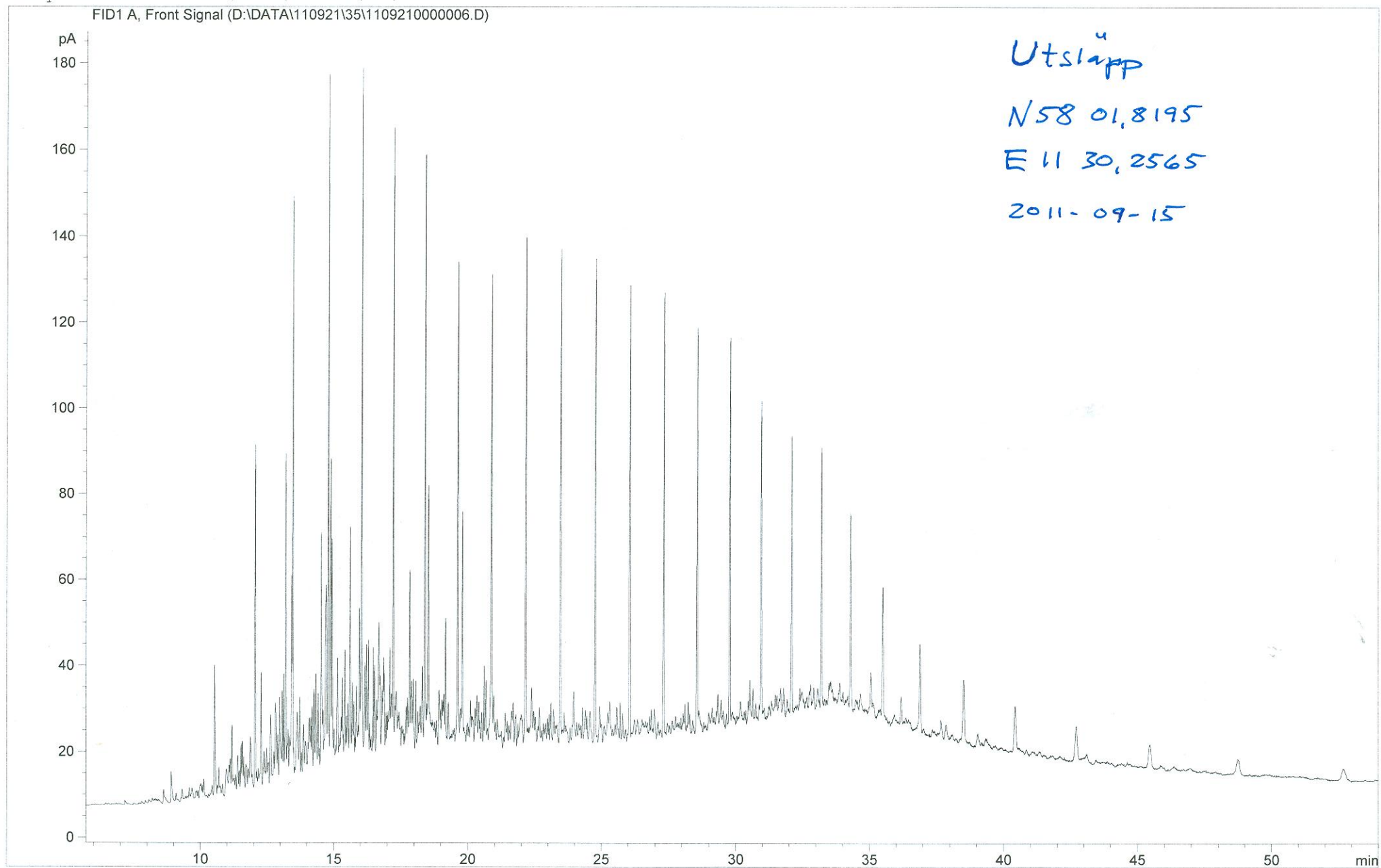
Utlåtandeskala

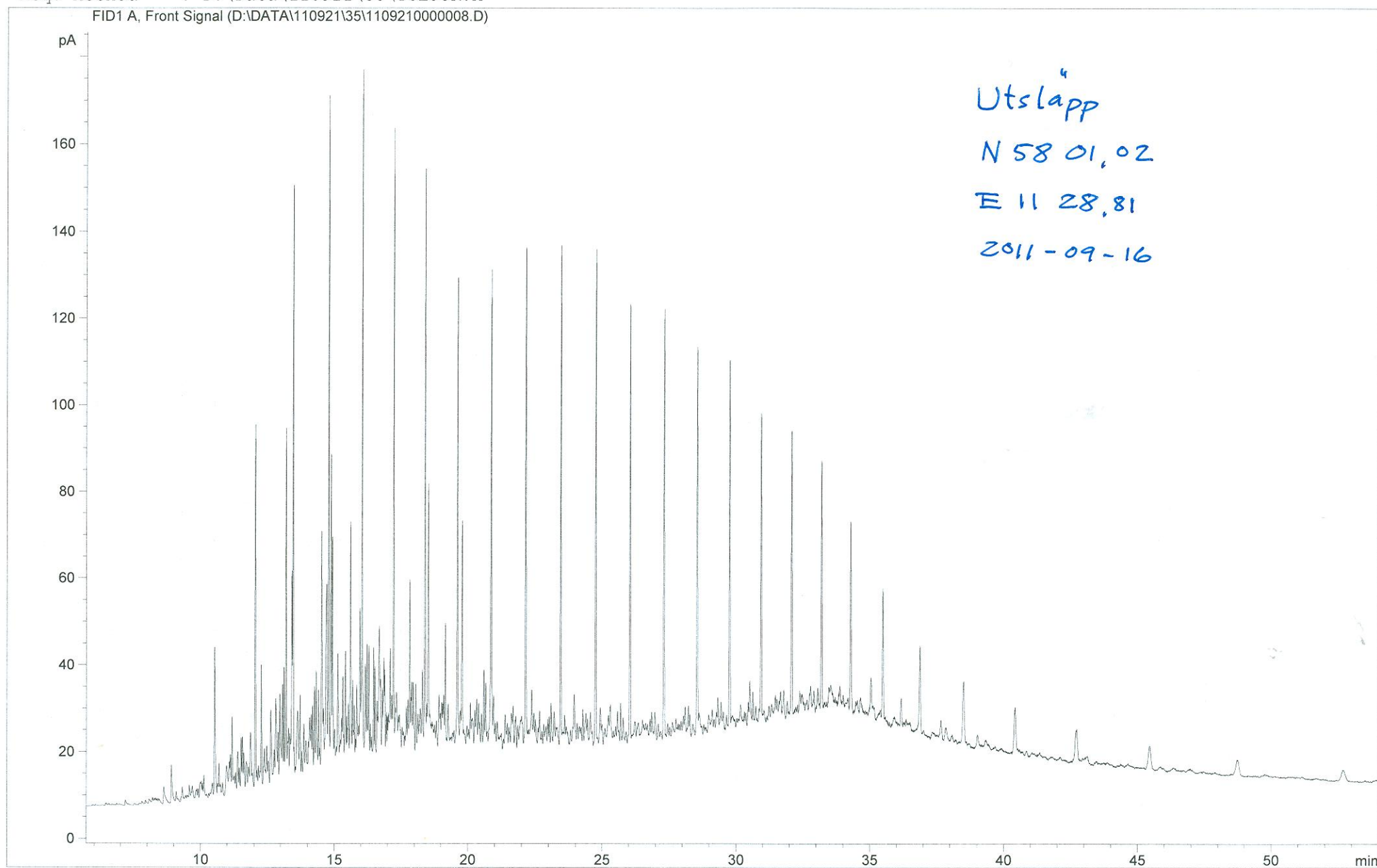
Ett sakkunnigutlåtande från SKL är en redovisning av de resultat som erhålls vid en undersökning. Resultaten har prövats dels gentemot den hypotes (antagande) som ligger till grund för frågeställningen under rubriken "Ändamål", dels gentemot andra aktuella hypoteser. Undersökarnas värdering av dessa resultat redovisas som graderade slutsatser enligt nedanstående utlåtandeskala. Utlåtandeskalan är utarbetad för och kopplad till SKL:s resultatvärdering som baseras på det logiska synsättet, för mer information se <http://www.skl.polisen.se/Utlatandeskala>.

I de fall undersökarna kan fastställa ett faktum används andra uttryckssätt såsom "är", "är inte" eller "kan uteslutas att".

- Grad +4* Resultaten talar extremt starkt för att ...
Möjligheten att erhålla dessa resultat om någon annan hypotes är sann bedöms i praktiken som utesluten.
- Grad +3* Resultaten talar starkt för att ...
Möjligheten att erhålla dessa resultat om någon annan hypotes är sann bedöms som mycket liten.
- Grad +2* Resultaten talar för att ...
Möjligheten att erhålla dessa resultat om någon annan hypotes är sann bedöms som liten.
- Grad +1* Resultaten talar i någon mån för att ...
De erhållna resultaten ger ett något större stöd för den uppställda hypotesen än för andra aktuella hypoteser.
- Grad 0* Resultaten talar varken för eller emot att ...
De erhållna resultaten ger inte mer stöd åt vare sig den uppställda hypotesen eller andra aktuella hypoteser.
- Grad -1* Resultaten talar i någon mån för att ... inte ...
De erhållna resultaten ger ett något mindre stöd för den uppställda hypotesen än för andra aktuella hypoteser.
- Grad -2* Resultaten talar för att ... inte ...
Möjligheten att erhålla dessa resultat om den uppställda hypotesen är sann bedöms som liten.
- Grad -3* Resultaten talar starkt för att ... inte ...
Möjligheten att erhålla dessa resultat om den uppställda hypotesen är sann bedöms som mycket liten.
- Grad -4* Resultaten talar extremt starkt för att ... inte ...
Möjligheten att erhålla dessa resultat om den uppställda hypotesen är sann bedöms i praktiken som utesluten.









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Entropi Sanerings AB
Anders Assarsjö
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AR-12-SL-033204-01



EUSEL12-00041937

Kundnummer: SL8652211

Analysrapport

Provnummer:	177-2012-04110151	Provtagningsdatum	2011-09-17		
Provbeskrivning:					
Matris:	Jord				
Provet ankom:	2012-04-11				
Utskriftsdatum:	2012-04-12				
Provmärkning:	Räbbeviken nr 2				
Analys	Resultat	Enhet	Mäto.	Metod/ref	
Torrsubstans	34.5	%	5%	SS EN 12880	a)
Bensen	< 0.010	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Toluen	0.55	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Etylbensen	0.89	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
M/P/O-Xylen	7.3	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Summa TEX	9.0	mg/kg Ts		LidMiljö.0A.01.09	a)
Alifater >C5-C8	40	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Alifater >C8-C10	290	mg/kg Ts	20%	LidMiljö.0A.01.09	a)
Alifater >C10-C12	2900	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Alifater >C12-C16	18000	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Alifater >C16-C35	74000	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Aromater >C8-C10	100	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Aromater >C10-C16	6900	mg/kg Ts	15%	LidMiljö.0A.01.15	a)
Metylkysener/benzo(a)antracener	210	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Metylpyren/fluorantener	230	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Aromater >C16-C35	440	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Oljetyp	Restolja, lätt gasolja, bensin				a)*
Benso(a)antracen	23	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Krysen	52	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benso(b,k)fluoranten	11	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benso(a)pyren	13	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Indeno(1,2,3-cd)pyren	2.2	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Dibenso(a,h)antracen	3.3	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Summa cancerogena PAH	100	mg/kg Ts		LidMiljö.0A.01.10	a)
Naftalen	110	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Acenaftylen	2.2	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Acenaften	43	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Fluoren	67	mg/kg Ts	25%	LidMiljö.0A.01.10	a)

Förklaringar

AR-003v29

Laboratoriet/laboratorierna är ackrediterade av respektive lands ackrediteringsorgan. Ej ackrediterade analyser är markerade med *

Mätosäkerheten, om inget annat anges, redovisas som utvidgad mätosäkerhet med täckningsfaktor 2. Undantag relaterat till analyser utförda utanför Sverige kan förekomma. Ytterligare upplysningar kan lämnas på begäran.

Denna rapport får endast återges i sin helhet, om inte utförande laboratorium i förväg skriftligen godkänt annat. Resultaten relaterar endast till det insända provet.



Fenantren	230	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Antracen	27	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Fluoranten	11	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Pyren	47	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benzo(g,h,i)perylen	8.7	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Summa övriga PAH	540	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med låg molekylvikt	160	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med medelhög molekylvikt	380	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med hög molekylvikt	110	mg/kg Ts		LidMiljö.0A.01.10	a)

Utförande laboratorium/underleverantör:

a) Eurofins Environment Sweden AB (Lidköping), SWEDEN

Kopia till:

Johan Ericsson (johan.ericsson@entropi.se)

Caroline Karlsson, Rapportansvarig

Denna rapport är elektroniskt signerad.

Förklaringar

AR-003v29

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Mätosäkerheten, om inget annat anges, redovisas som utvidgad mätosäkerhet med täckningsfaktor 2. Undantag relaterat till analyser utförda utanför Sverige kan förekomma. Ytterligare upplysningar kan lämnas på begäran.

Denna rapport får endast återges i sin helhet, om inte utförande laboratorium i förväg skriftligen godkänt annat. Resultaten relaterar endast till det insända provet.

Entropi Sanerings AB
Anders Assarsjö
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AR-12-SL-033205-01



EUSELI2-00041937

Kundnummer: SL8652211

Analysrapport

Provnummer:	177-2012-04110152	Provtagningsdatum	2011-09-17		
Provbeskrivning:					
Matris:	Jord				
Provet ankom:	2012-04-11				
Utskriftsdatum:	2012-04-12				
Provmärkning:	Koön				
Analys	Resultat	Enhet	Mäto.	Metod/ref	
Torrsubstans	25.7	%	5%	SS EN 12880	a)
Bensen	0.088	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Toluen	2.8	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Etylbensen	3.6	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
M/P/O-Xylen	30	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Summa TEX	36	mg/kg Ts		LidMiljö.0A.01.09	a)
Alifater >C5-C8	180	mg/kg Ts	20%	LidMiljö.0A.01.09	a)
Alifater >C8-C10	1000	mg/kg Ts	20%	LidMiljö.0A.01.09	a)
Alifater >C10-C12	5900	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Alifater >C12-C16	29000	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Alifater >C16-C35	95000	mg/kg Ts	20%	LidMiljö.0A.01.15	a)
Aromater >C8-C10	310	mg/kg Ts	30%	LidMiljö.0A.01.09	a)
Aromater >C10-C16	11000	mg/kg Ts	15%	LidMiljö.0A.01.15	a)
Metylkysener/benzo(a)antracener	300	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Metylpyren/fluorantener	330	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Aromater >C16-C35	630	mg/kg Ts	25%	LidMiljö.0A.01.15	a)
Oljetyp	Restolja, lätt gasolja, bensin				a)*
Benso(a)antracen	29	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Kysen	68	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benso(b,k)fluoranten	15	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benso(a)pyren	18	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Indeno(1,2,3-cd)pyren	2.9	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Dibenso(a,h)antracen	4.4	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Summa cancerogena PAH	140	mg/kg Ts		LidMiljö.0A.01.10	a)
Naftalen	250	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Acenaftylen	2.9	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Acenaften	69	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Fluoren	100	mg/kg Ts	25%	LidMiljö.0A.01.10	a)

Förklaringar

AR-003v29

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Mätosäkerheten, om inget annat anges, redovisas som utvidgad mätosäkerhet med täckningsfaktor 2. Undantag relaterat till analyser utförda utanför Sverige kan förekomma. Ytterligare upplysningar kan lämnas på begäran.

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Fenantren	330	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Antracen	41	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Fluoranten	13	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Pyren	62	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Benzo(g,h,i)perylene	10	mg/kg Ts	25%	LidMiljö.0A.01.10	a)
Summa övriga PAH	880	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med låg molekylvikt	320	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med medelhög molekylvikt	540	mg/kg Ts		LidMiljö.0A.01.10	a)
Summa PAH med hög molekylvikt	150	mg/kg Ts		LidMiljö.0A.01.10	a)

Utförande laboratorium/underleverantör:

a) Eurofins Environment Sweden AB (Lidköping), SWEDEN

Kopia till:

Johan Ericsson (johan.ericsson@entropi.se)

Caroline Karlsson, Rapportansvarig

Denna rapport är elektroniskt signerad.

Förklaringar

AR-003v29

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Mätosäkerheten, om inget annat anges, redovisas som utvidgad mätosäkerhet med täckningsfaktor 2. Undantag relaterat till analyser utförda utanför Sverige kan förekomma. Ytterligare upplysningar kan lämnas på begäran.

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Samtliga ämnen analyserade i blåmussla och sediment:

Analyspaket 1 (Tyskland)	Analyspaket 2 (Kanada)
naftalen	naftalen
acenaftilen	acenaftilen
acenaften	acenaften
fluoren	fluoren
fenantren	fenantren
antracen	antracen
fluoranten	fluoranten
pyren	pyren
bens(a)antracen	bens(a)antracen
krysen	krysen
bens(b)fluoranten	bens(b)fluoranten
bens(k)fluoranten	bens(k)fluoranten
bens(a)pyren	bens(a)pyren
dibenso(ah)antracen	dibenso(ah)antracen
benso(ghi)perylene	benso(ghi)perylene
indeno(123cd)pyren	indeno(123cd)pyren
summa 16 EPA-PAH	summa 16 EPA-PAH
PAH cancerogena	bens(e)pyrene
PAH, summa övriga	bifenyler
alifater >C5-C8	c2 bens(a)antracen/krysener
alifater >C8-C10	c2 bensofluorantenes/bensopyrens
alifater >C10-C12	c2 bifenyler
alifater >C12-C16	c2 dibensotiofener
alifater >C5-C16	c2 fluorener
alifater >C16-C35	c2 naftalener
naftalen (C1-alkyl.)	c2 fenantrener/antracener
naftalen (C2-alkyl.)	c3 bensantracener/krysener
naftalen (C3-alkyl.)	c3 dibensotiofener
fenantren/antracen (C1-alkyl.)	c3 naftalener
fenantren/antracen (C2-alkyl.)	c3 fenantrener/antracener
dibensotiofen	c4 bensatrener/krysener
dibensotiofen (C1-alkyl.)	c4 dibensotiofener
dibensotiofen (C2-alkyl.)	c4 fluorantener/pyrener
dibensotiofen (C3-alkyl.)	c4 naftalener
	c4 fenantrener/antracener
	dibensotiofen
	c1 bens(a)antracener/krysener
	c1 bensofluorantenes/bensopyrens
	c1 acenaftener
	c1 bifenyler
	c1 dibensotiofener
	c1 fluorantener/pyrener
	c1 fluorener
	1-metylnaftalen
	2-metylnaftalen
	c1 fenantrener/antracener
	perylene
	c2 fluorantener/pyrener
	c3 fluorantener/pyrener
	c3 fluorener
	reten

Tabellen visar de olika beteckningarna på lokalerna för att lättare hitta analysresultat till rätt lokal i följande rapport från ALS (Version: Final, 21 februari 2012).

Lokal	Område	Musselprover Märkning	ALS märkning	Sedimentprover märkning	ALS märkning
1	Ursprungsvik	U7	424393		
2	Räbbevik	R3a	424391		
2	Räbbevik	R3b	424392		
3	Koön	K2a	424388	K2sed1	424398
3	Koön	K2b	424389	K2sed2	424399
3	Koön	K2c	424390	K2sed3	423341
4	Kyrkesund Nord	KN6	423340		
5	Bö Klåva	B1a	424386	B1sed1	424397
5	Bö Klåva	B1b	424387		
6	Kyrkesund Syd	KS4a		KSsed1	424400
6	Kyrkesund Syd	KS4b		KSsed2	424401
6	Kyrkesund Syd	KS4c	423339		
7	Kyrkesund Öst	KE5	423338		
	Ref. Marstrand	RefM8	424394		
	Ref. Lysekil	RefL9a	424395		
	Ref. Lysekil	RefL9b	424396		



ALS SCANDINAVIA
ATTN: ISABELLA LINGEHED
PO BOX 511
S-183 25
TABY

Date Received: 10-FEB-12
Report Date: 21-FEB-12 13:48 (MT)
Version: FINAL

Client Phone: 085-277-5200

Certificate of Analysis

Lab Work Order #: **L1113105**
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Brent Finnstad
Account Manager

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ADDRESS: 5424 - 97 Street, Edmonton, AB T6E 5C1 Canada | Phone: +1 780 391 2300 | Fax: +1 780 434 9178
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-1 423339							
Sampled By: CLIENT							
Matrix: TISSUE							
PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-2 424399							
Sampled By: CLIENT							
Matrix: SEDIMENT							
PAHs & Alkylated PAHs							
C1 Fluorenes	<0.040		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
1-Methylnaphthalene	0.023		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
2-Methylnaphthalene	0.024		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
C1 Phenanthrenes/Anthracenes	0.402		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
Naphthalene	<0.050		0.050	mg/kg	13-FEB-12	17-FEB-12	R2326588
Phenanthrene	0.406		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
Pyrene	0.924		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
Quinoline	<0.010		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
C2 Fluoranthenes/Pyrenes	0.245		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
C3 Fluoranthenes/Pyrenes	0.100		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
C3 Fluorenes	<0.040		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
C4 Fluoranthenes/Pyrenes	0.044		0.040	mg/kg	13-FEB-12	17-FEB-12	R2326588
Retene	0.544		0.010	mg/kg	13-FEB-12	17-FEB-12	R2326588
Surrogate: Naphthalene d8	55.0		50-130	%	13-FEB-12	17-FEB-12	R2326588
Surrogate: Acenaphthylene d8	82.0		60-130	%	13-FEB-12	17-FEB-12	R2326588
Surrogate: Phenanthrene d10	103.0		60-130	%	13-FEB-12	17-FEB-12	R2326588
Surrogate: Pyrene d10	105.0		60-130	%	13-FEB-12	17-FEB-12	R2326588
Surrogate: Benzo(a)pyrene d12	109.0		60-130	%	13-FEB-12	17-FEB-12	R2326588
Surrogate: Benzo(g,h,i)perylene d12	110.0		60-130	%	13-FEB-12	17-FEB-12	R2326588
L1113105-3 424401							
Sampled By: CLIENT							
Matrix: SEDIMENT							
Miscellaneous Parameters							
% Moisture	42.3		0.10	%		14-FEB-12	R2324733
PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Acenaphthylene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Acridine	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Anthracene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benz(a)anthracene	0.017		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benzo(a)pyrene	0.020		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Perylene	0.049		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benzo(e)pyrene	0.014		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benzo(b&j)fluoranthene	0.026		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Benzo(g,h,i)perylene	0.018		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Biphenyl	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 sub'd B(a)A/chrysene	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Biphenyls	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Fluorenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Naphthalenes	0.106		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Phenanthrenes/Anthracenes	0.051		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Dibenzothiophenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Naphthalenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Phenanthrenes/Anthracenes	0.067		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C4 Dibenzothiophenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C4 Naphthalenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C4 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-3 424401							
Sampled By: CLIENT							
Matrix: SEDIMENT							
PAHs & Alkylated PAHs							
C4 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
Chrysene	0.021		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Dibenzothiophene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Fluoranthene	0.050		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Fluorene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Indeno(1,2,3-cd)pyrene	0.018		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Acenaphthenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Biphenyls	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Fluorenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
1-Methylnaphthalene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
2-Methylnaphthalene	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
C1 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
Naphthalene	<0.050		0.050	mg/kg	13-FEB-12	16-FEB-12	R2326588
Phenanthrene	0.022		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Pyrene	0.047		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Quinoline	<0.010		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
C2 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C3 Fluorenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	13-FEB-12	16-FEB-12	R2326588
Retene	0.012		0.010	mg/kg	13-FEB-12	16-FEB-12	R2326588
Surrogate: Naphthalene d8	53.0		50-130	%	13-FEB-12	16-FEB-12	R2326588
Surrogate: Acenaphthylene d8	87.0		60-130	%	13-FEB-12	16-FEB-12	R2326588
Surrogate: Phenanthrene d10	109.0		60-130	%	13-FEB-12	16-FEB-12	R2326588
Surrogate: Pyrene d10	109.0		60-130	%	13-FEB-12	16-FEB-12	R2326588
Surrogate: Benzo(a)pyrene d12	115.0		60-130	%	13-FEB-12	16-FEB-12	R2326588
Surrogate: Benzo(g,h,i)perylene d12	112.0		60-130	%	13-FEB-12	16-FEB-12	R2326588
L1113105-4 424387							
Sampled By: CLIENT							
Matrix: TISSUE							
PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-4 424387							
Sampled By: CLIENT							
Matrix: TISSUE							
PAHs & Alkylated PAHs							
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes	0.042		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes	0.162		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Phenanthrenes/Anthracenes	0.086		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Surrogate: Naphthalene d8	32.0		30-130	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Acenaphthylene d8	63.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Phenanthrene d10	91.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Pyrene d10	91.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(a)pyrene d12	70.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(g,h,i)perylene d12	99.0		40-130	%	14-FEB-12	17-FEB-12	R2327022
L1113105-5 424389							
Sampled By: CLIENT							
Matrix: TISSUE							
PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-5 424389							
Sampled By: CLIENT							
Matrix: TISSUE							
PAHs & Alkylated PAHs							
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes	0.058		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes	0.061		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes	0.044		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Phenanthrenes/Anthracenes	0.092		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Surrogate: Naphthalene d8	45.0		30-130	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Acenaphthylene d8	70.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Phenanthrene d10	85.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Pyrene d10	87.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(a)pyrene d12	67.0		50-150	%	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-5 424389 Sampled By: CLIENT Matrix: TISSUE PAHs & Alkylated PAHs Surrogate: Benzo(g,h,i)perylene d12	98.0		40-130	%	14-FEB-12	17-FEB-12	R2327022
L1113105-6 424392 Sampled By: CLIENT Matrix: TISSUE PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes	0.116		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzanthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes	0.057		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes	0.190		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzanthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes	0.059		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes	0.050		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Phenanthrenes/Anthracenes	0.200		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	0.060		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-6	424392							
Sampled By: CLIENT								
Matrix: TISSUE								
PAHs & Alkylated PAHs								
Pyrene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Surrogate: Naphthalene d8		55.0		30-130	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Acenaphthylene d8		76.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Phenanthrene d10		91.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Pyrene d10		92.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(a)pyrene d12		72.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(g,h,i)perylene d12		99.0		40-130	%	14-FEB-12	17-FEB-12	R2327022
L1113105-7	424393							
Sampled By: CLIENT								
Matrix: TISSUE								
PAHs & Alkylated PAHs								
Acenaphthene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene		0.022		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene		0.012		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene		0.032		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene		0.015		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes		0.253		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes		0.178		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes		0.063		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes		0.552		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzanthracenes/Chrysenes		0.104		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes		0.374		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes		0.099		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes		0.660		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzanthracenes/Chrysenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes		0.229		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes		0.113		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes		0.189		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Phenanthrenes/Anthracenes		1.20		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene		0.050		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene		<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes		0.244		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes		<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-7 424393 Sampled By: CLIENT Matrix: TISSUE PAHs & Alkylated PAHs							
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	0.041		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	0.114		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	0.182		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	0.014		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Pyrene	0.024		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes	0.234		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes	0.230		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes	0.154		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene	0.039		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Surrogate: Naphthalene d8	36.0		30-130	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Acenaphthylene d8	50.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Phenanthrene d10	64.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Pyrene d10	70.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(a)pyrene d12	60.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(g,h,i)perylene d12	64.0		40-130	%	14-FEB-12	17-FEB-12	R2327022
L1113105-8 424394 Sampled By: CLIENT Matrix: TISSUE PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Benzantracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C4 Naphthalenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1113105-8 424394 Sampled By: CLIENT Matrix: TISSUE							
PAHs & Alkylated PAHs							
C4 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Chrysene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenz(a,h)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Dibenzothiophene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Fluorene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Indeno(1,2,3-cd)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Acenaphthenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
1-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
2-Methylnaphthalene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C1 Phenanthrenes/Anthracenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Naphthalene	<0.050		0.050	mg/kg	14-FEB-12	17-FEB-12	R2327022
Perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Phenanthrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluoranthenes/Pyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C3 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
Retene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Surrogate: Naphthalene d8	53.0		30-130	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Acenaphthylene d8	82.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Phenanthrene d10	93.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Pyrene d10	93.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(a)pyrene d12	70.0		50-150	%	14-FEB-12	17-FEB-12	R2327022
Surrogate: Benzo(g,h,i)perylene d12	101.0		40-130	%	14-FEB-12	17-FEB-12	R2327022
L1113105-9 424396 Sampled By: CLIENT Matrix: TISSUE							
PAHs & Alkylated PAHs							
Acenaphthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Acenaphthylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benz(a)anthracene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(a)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(e)pyrene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(b&j)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(k)fluoranthene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Benzo(g,h,i)perylene	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
Biphenyl	<0.010		0.010	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benz(a)Anthracenes/Chrysenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Benzofluoranthenes/Benzopyrenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Biphenyls	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Dibenzothiophenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022
C2 Fluorenes	<0.040		0.040	mg/kg	14-FEB-12	17-FEB-12	R2327022

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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PAH-ALK-GCMS-EX	Soil	PAHs & Alkylated PAHs	EPA 3540/8270-GC/MS
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NOTE: The following PAH parameter results are determined via a semi-quantitative method. To be used for research purposes only.

C1 B(a)A/chrysene
 C1B(b&kF/B(a)P
 C1 acenaphthene
 C1 biphenyl
 C1dibenzothiophene
 C1 fluoranthene/pyrene
 C1 fluorene
 C1 naphthalene
 C1 phenanthrene/anthracene
 C2 B(a)A/chrysene
 C2 b(b&k)F/b(a)P
 C2 biphenyl
 C2 dibenzothiophene
 C2 fluoranthene/pyrene
 C2 fluorene
 C2 naphthalene
 C2 phenanthrene/anth.
 C3 dibenzothiophene
 C3 fluorene
 C3 naphthalene
 C3 phenanthrene/anth.
 C4 dibenzothiophene
 C4 naphthalene
 C4 phenanthrene/anth.

Note: Results are reported on a dry weight basis

PAH-ALK-GCMS-EX	Tissue	PAHs & Alkylated PAHs	EPA 3540/8270-GC/MS
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NOTE: The following PAH parameter results are determined via a semi-quantitative method. To be used for research purposes only.

C1 B(a)A/chrysene
 C1B(b&kF/B(a)P
 C1 acenaphthene
 C1 biphenyl
 C1dibenzothiophene
 C1 fluoranthene/pyrene
 C1 fluorene
 C1 naphthalene
 C1 phenanthrene/anthracene
 C2 B(a)A/chrysene
 C2 b(b&k)F/b(a)P
 C2 biphenyl
 C2 dibenzothiophene
 C2 fluoranthene/pyrene
 C2 fluorene
 C2 naphthalene
 C2 phenanthrene/anth.
 C3 dibenzothiophene
 C3 fluorene
 C3 naphthalene
 C3 phenanthrene/anth.
 C4 dibenzothiophene
 C4 naphthalene
 C4 phenanthrene/anth.

Results are reported on a wet weight basis.

PREP-MOISTURE-EX	Soil	% Moisture	Oven dry 105C-Gravimetric
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** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
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Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EX		ALS CENTRE OF EXCELLENCE - EDMONTON, ALBERTA, CANADA	

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1113105

Report Date: 21-FEB-12

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY
Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Soil						
Batch	R2326588							
WG1428993-4	DUP	L1113105-2						
Acenaphthene		0.021	0.021		mg/kg	0.0	50	16-FEB-12
Acenaphthylene		0.099	0.101		mg/kg	2.0	50	16-FEB-12
Acridine		0.025	0.024		mg/kg	4.1	50	16-FEB-12
Anthracene		0.137	0.140		mg/kg	2.2	50	16-FEB-12
Benz(a)anthracene		0.505	0.502		mg/kg	0.60	50	16-FEB-12
Benzo(a)pyrene		0.521	0.575		mg/kg	9.9	50	16-FEB-12
Perylene		0.196	0.208		mg/kg	5.9	50	16-FEB-12
Benzo(e)pyrene		0.393	0.416		mg/kg	5.7	50	16-FEB-12
Benzo(b&j)fluoranthene		0.728	0.769		mg/kg	5.5	50	16-FEB-12
Benzo(k)fluoranthene		0.250	0.279		mg/kg	11	50	16-FEB-12
Benzo(g,h,i)perylene		0.396	0.398		mg/kg	0.50	50	16-FEB-12
Biphenyl		0.018	0.018		mg/kg	0.0	50	16-FEB-12
C2 sub'd B(a)A/chrysene		0.124	0.137		mg/kg	10	50	16-FEB-12
C2 Benzofluoranthenes/Benzopyrenes		0.139	0.161		mg/kg	15	50	16-FEB-12
C2 Biphenyls		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C2 Dibenzothiophenes		0.045	0.046		mg/kg	2.2	50	16-FEB-12
C2 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C2 Naphthalenes		0.271	0.274		mg/kg	1.1	50	16-FEB-12
C2 Phenanthrenes/Anthracenes		0.419	0.418		mg/kg	0.24	50	16-FEB-12
C3 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C3 Naphthalenes		0.099	0.100		mg/kg	1.0	50	16-FEB-12
C3 Phenanthrenes/Anthracenes		0.255	0.260		mg/kg	1.9	50	16-FEB-12
C4 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C4 Naphthalenes		0.057	0.058		mg/kg	1.7	50	16-FEB-12
C4 Phenanthrenes/Anthracenes		0.542	0.561		mg/kg	3.4	50	16-FEB-12
C3 Benzantracenes/Chrysenes		0.068	0.066		mg/kg	3.0	50	16-FEB-12
C4 Benzantracenes/Chrysenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
Chrysene		0.546	0.558		mg/kg	2.2	50	16-FEB-12
Dibenz(a,h)anthracene		0.094	0.097		mg/kg	3.1	50	16-FEB-12
Dibenzothiophene		0.038	0.038		mg/kg	0.0	50	16-FEB-12
Fluoranthene		1.05	1.05		mg/kg	0.095	50	16-FEB-12
Fluorene		0.045	0.045		mg/kg	0.0	50	16-FEB-12
Indeno(1,2,3-cd)pyrene		0.404	0.413		mg/kg			16-FEB-12

Quality Control Report

Workorder: L1113105

Report Date: 21-FEB-12

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Soil						
Batch	R2326588							
WG1428993-4	DUP	L1113105-2						
Indeno(1,2,3-cd)pyrene		0.404	0.413		mg/kg	2.2	50	16-FEB-12
C1 Benz(a)Anthracenes/Chrysenes		0.270	0.275		mg/kg	1.8	50	16-FEB-12
C1 Benzofluoranthenes/Benzopyrenes		0.386	0.461		mg/kg	18	50	16-FEB-12
C1 Acenaphthenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C1 Biphenyls		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C1 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C1 Fluoranthenes/Pyrenes		0.379	0.403		mg/kg	6.1	50	16-FEB-12
C1 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
1-Methylnaphthalene		0.023	0.021		mg/kg	9.1	50	16-FEB-12
2-Methylnaphthalene		0.024	0.024		mg/kg	0.0	50	16-FEB-12
C1 Phenanthrenes/Anthracenes		0.402	0.397		mg/kg	1.3	50	16-FEB-12
Naphthalene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	16-FEB-12
Phenanthrene		0.406	0.422		mg/kg	3.9	50	16-FEB-12
Pyrene		0.924	0.962		mg/kg	4.0	50	16-FEB-12
Quinoline		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	16-FEB-12
C2 Fluoranthenes/Pyrenes		0.245	0.248		mg/kg	1.2	50	16-FEB-12
C3 Fluoranthenes/Pyrenes		0.100	0.107		mg/kg	6.8	50	16-FEB-12
C3 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	16-FEB-12
C4 Fluoranthenes/Pyrenes		0.044	0.046		mg/kg	4.4	50	16-FEB-12
Retene		0.544	0.560		mg/kg	2.9	50	16-FEB-12
WG1428993-3	LCS							
Acenaphthene			87.9		%		60-130	16-FEB-12
Acenaphthylene			83.2		%		60-130	16-FEB-12
Acridine			81.3		%		60-130	16-FEB-12
Anthracene			82.8		%		60-130	16-FEB-12
Benz(a)anthracene			94.0		%		60-130	16-FEB-12
Benzo(a)pyrene			71.7		%		60-130	16-FEB-12
Perylene			76.3		%		60-130	16-FEB-12
Benzo(e)pyrene			85.7		%		60-130	16-FEB-12
Benzo(b&j)fluoranthene			86.9		%		60-130	16-FEB-12
Benzo(k)fluoranthene			85.9		%		60-130	16-FEB-12
Benzo(g,h,i)perylene			96.8		%		60-130	16-FEB-12
Biphenyl			84.9		%		60-130	16-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Soil						
Batch	R2326588							
WG1428993-3	LCS							
C2 Naphthalenes			85.8		%		50-150	16-FEB-12
C3 Naphthalenes			91.4		%		50-150	16-FEB-12
C4 Phenanthrenes/Anthracenes			94.7		%		60-130	16-FEB-12
Chrysene			100.0		%		60-130	16-FEB-12
Dibenz(a,h)anthracene			90.3		%		60-130	16-FEB-12
Dibenzothiophene			93.0		%		60-130	16-FEB-12
Fluoranthene			94.2		%		60-130	16-FEB-12
Fluorene			91.9		%		60-130	16-FEB-12
Indeno(1,2,3-cd)pyrene			92.2		%		60-130	16-FEB-12
1-Methylnaphthalene			77.4		%		50-130	16-FEB-12
2-Methylnaphthalene			76.2		%		50-130	16-FEB-12
C1 Phenanthrenes/Anthracenes			78.4		%		50-150	16-FEB-12
Naphthalene			64.2		%		50-130	16-FEB-12
Phenanthrene			93.1		%		60-130	16-FEB-12
Pyrene			92.0		%		60-130	16-FEB-12
Quinoline			86.7		%		60-130	16-FEB-12
Retene			94.7		%		60-130	16-FEB-12
WG1428993-2	MB							
Acenaphthene			<0.010		mg/kg		0.01	16-FEB-12
Acenaphthylene			<0.010		mg/kg		0.01	16-FEB-12
Acridine			<0.010		mg/kg		0.01	16-FEB-12
Anthracene			<0.010		mg/kg		0.01	16-FEB-12
Benz(a)anthracene			<0.010		mg/kg		0.01	16-FEB-12
Benzo(a)pyrene			<0.010		mg/kg		0.01	16-FEB-12
Perylene			<0.010		mg/kg		0.01	16-FEB-12
Benzo(e)pyrene			<0.010		mg/kg		0.01	16-FEB-12
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	16-FEB-12
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	16-FEB-12
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	16-FEB-12
Biphenyl			<0.010		mg/kg		0.01	16-FEB-12
C2 sub'd B(a)A/chrysene			<0.040		mg/kg		0.04	16-FEB-12
C2 Benzo(a)fluoranthene/Benzopyrenes			<0.040		mg/kg		0.04	16-FEB-12
C2 Biphenyls			<0.040		mg/kg		0.04	16-FEB-12
C2 Dibenzothiophenes			<0.040		mg/kg		0.04	16-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Soil						
Batch	R2326588							
WG1428993-2	MB							
C2 Fluorenes			<0.040		mg/kg		0.04	16-FEB-12
C2 Naphthalenes			<0.040		mg/kg		0.04	16-FEB-12
C2 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	16-FEB-12
C3 Dibenzothiophenes			<0.040		mg/kg		0.04	16-FEB-12
C3 Naphthalenes			<0.040		mg/kg		0.04	16-FEB-12
C3 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	16-FEB-12
C4 Dibenzothiophenes			<0.040		mg/kg		0.04	16-FEB-12
C4 Naphthalenes			<0.040		mg/kg		0.04	16-FEB-12
C4 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	16-FEB-12
C3 Benzantracenes/Chrysenes			<0.040		mg/kg		0.04	16-FEB-12
C4 Benzantracenes/Chrysenes			<0.040		mg/kg		0.04	16-FEB-12
Chrysene			<0.010		mg/kg		0.01	16-FEB-12
Dibenz(a,h)anthracene			<0.010		mg/kg		0.01	16-FEB-12
Dibenzothiophene			<0.010		mg/kg		0.01	16-FEB-12
Fluoranthene			<0.010		mg/kg		0.01	16-FEB-12
Fluorene			<0.010		mg/kg		0.01	16-FEB-12
Indeno(1,2,3-cd)pyrene			<0.010		mg/kg		0.01	16-FEB-12
C1 Benz(a)Anthracenes/Chrysenes			<0.040		mg/kg		0.04	16-FEB-12
C1 Benzofluoranthenes/Benzopyrenes			<0.040		mg/kg		0.04	16-FEB-12
C1 Acenaphthenes			<0.040		mg/kg		0.04	16-FEB-12
C1 Biphenyls			<0.040		mg/kg		0.04	16-FEB-12
C1 Dibenzothiophenes			<0.040		mg/kg		0.04	16-FEB-12
C1 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	16-FEB-12
C1 Fluorenes			<0.040		mg/kg		0.04	16-FEB-12
1-Methylnaphthalene			<0.010		mg/kg		0.01	16-FEB-12
2-Methylnaphthalene			<0.010		mg/kg		0.01	16-FEB-12
C1 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	16-FEB-12
Naphthalene			<0.050		mg/kg		0.05	16-FEB-12
Phenanthrene			<0.010		mg/kg		0.01	16-FEB-12
Pyrene			<0.010		mg/kg		0.01	16-FEB-12
Quinoline			<0.010		mg/kg		0.01	16-FEB-12
C2 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	16-FEB-12
C3 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	16-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX Soil								
Batch R2326588								
WG1428993-2 MB								
C3 Fluorenes			<0.040		mg/kg		0.04	16-FEB-12
C4 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	16-FEB-12
Retene			<0.010		mg/kg		0.01	16-FEB-12
Surrogate: Naphthalene d8			56.0		%		50-130	16-FEB-12
Surrogate: Acenaphthylene d8			87.0		%		60-130	16-FEB-12
Surrogate: Phenanthrene d10			102.0		%		60-130	16-FEB-12
Surrogate: Pyrene d10			102.0		%		60-130	16-FEB-12
Surrogate: Benzo(a)pyrene d12			68.0		%		60-130	16-FEB-12
Surrogate: Benzo(g,h,i)perylene d12			117.0		%		60-130	16-FEB-12
PAH-ALK-GCMS-EX Tissue								
Batch R2327022								
WG1429627-5 DUP L1113105-8								
Acenaphthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Acenaphthylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benz(a)anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benzo(a)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benzo(e)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benzo(b&j)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benzo(k)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Benzo(g,h,i)perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Biphenyl		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Benz(a)Anthracenes/Chrysenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Benzofluoranthenes/Benzopyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Biphenyls		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Naphthalenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Phenanthrenes/Anthracenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Benzanthracenes/Chrysenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Naphthalenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Phenanthrenes/Anthracenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Tissue						
Batch	R2327022							
WG1429627-5	DUP	L1113105-8						
C4 Benzantracenes/Chrysenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C4 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C4 Fluoranthenes/Pyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C4 Naphthalenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C4 Phenanthrenes/Anthracenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
Chrysene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Dibenz(a,h)anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Dibenzothiophene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Fluorene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Indeno(1,2,3-cd)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Benz(a)Anthracenes/Chrysenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Benzofluoranthenes/Benzopyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Acenaphthenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Biphenyls		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Dibenzothiophenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Fluoranthenes/Pyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
1-Methylnaphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
2-Methylnaphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
C1 Phenanthrenes/Anthracenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
Naphthalene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	17-FEB-12
Perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Phenanthrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
Pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
C2 Fluoranthenes/Pyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Fluoranthenes/Pyrenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
C3 Fluorenes		<0.040	<0.040	RPD-NA	mg/kg	N/A	50	17-FEB-12
Retene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	17-FEB-12
WG1429627-3	LCS							
Acenaphthene			78.6		%		50-150	17-FEB-12
Acenaphthylene			76.3		%		50-150	17-FEB-12
Anthracene			78.4		%		50-150	17-FEB-12

Quality Control Report

Workorder: L1113105

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Tissue						
Batch	R2327022							
WG1429627-3	LCS							
Benz(a)anthracene			89.2		%		50-150	17-FEB-12
Benzo(a)pyrene			64.6		%		50-150	17-FEB-12
Benzo(e)pyrene			76.6		%		50-150	17-FEB-12
Benzo(b&j)fluoranthene			77.7		%		50-150	17-FEB-12
Benzo(k)fluoranthene			74.3		%		50-150	17-FEB-12
Benzo(g,h,i)perylene			98.3		%		50-150	17-FEB-12
Biphenyl			76.8		%		50-150	17-FEB-12
C2 Naphthalenes			77.2		%		50-150	17-FEB-12
C3 Naphthalenes			82.1		%		50-150	17-FEB-12
C4 Phenanthrenes/Anthracenes			87.9		%		50-150	17-FEB-12
Chrysene			90.4		%		50-150	17-FEB-12
Dibenz(a,h)anthracene			87.2		%		50-150	17-FEB-12
Dibenzothiophene			73.0		%		50-150	17-FEB-12
Fluoranthene			87.6		%		50-150	17-FEB-12
Fluorene			82.6		%		50-150	17-FEB-12
Indeno(1,2,3-cd)pyrene			92.3		%		50-150	17-FEB-12
1-Methylnaphthalene			70.7		%		50-150	17-FEB-12
2-Methylnaphthalene			70.1		%		50-150	17-FEB-12
C1 Phenanthrenes/Anthracenes			76.8		%		50-150	17-FEB-12
Naphthalene			63.2		%		30-150	17-FEB-12
Perylene			66.9		%		50-150	17-FEB-12
Phenanthrene			86.0		%		50-150	17-FEB-12
Pyrene			86.5		%		50-150	17-FEB-12
Retene			88.0		%		50-150	17-FEB-12
WG1429627-2	MB							
Acenaphthene			<0.010		mg/kg		0.01	17-FEB-12
Acenaphthylene			<0.010		mg/kg		0.01	17-FEB-12
Anthracene			<0.010		mg/kg		0.01	17-FEB-12
Benz(a)anthracene			<0.010		mg/kg		0.01	17-FEB-12
Benzo(a)pyrene			<0.010		mg/kg		0.01	17-FEB-12
Benzo(e)pyrene			<0.010		mg/kg		0.01	17-FEB-12
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	17-FEB-12
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	17-FEB-12
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	17-FEB-12

Quality Control Report

Workorder: L1113105

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY
Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX Tissue								
Batch	R2327022							
WG1429627-2 MB								
Biphenyl			<0.010		mg/kg		0.01	17-FEB-12
C2 Benz(a)Anthracenes/Chrysenes			<0.040		mg/kg		0.04	17-FEB-12
C2 Benzofluoranthenes/Benzopyrenes			<0.040		mg/kg		0.04	17-FEB-12
C2 Biphenyls			<0.040		mg/kg		0.04	17-FEB-12
C2 Dibenzothiophenes			<0.040		mg/kg		0.04	17-FEB-12
C2 Fluorenes			<0.040		mg/kg		0.04	17-FEB-12
C2 Naphthalenes			<0.040		mg/kg		0.04	17-FEB-12
C2 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Benzantracenes/Chrysenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Dibenzothiophenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Naphthalenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	17-FEB-12
C4 Benzantracenes/Chrysenes			<0.040		mg/kg		0.04	17-FEB-12
C4 Dibenzothiophenes			<0.040		mg/kg		0.04	17-FEB-12
C4 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	17-FEB-12
C4 Naphthalenes			<0.040		mg/kg		0.04	17-FEB-12
C4 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	17-FEB-12
Chrysene			<0.010		mg/kg		0.01	17-FEB-12
Dibenz(a,h)anthracene			<0.010		mg/kg		0.01	17-FEB-12
Dibenzothiophene			<0.010		mg/kg		0.01	17-FEB-12
Fluoranthene			<0.010		mg/kg		0.01	17-FEB-12
Fluorene			<0.010		mg/kg		0.01	17-FEB-12
Indeno(1,2,3-cd)pyrene			<0.010		mg/kg		0.01	17-FEB-12
C1 Benz(a)Anthracenes/Chrysenes			<0.040		mg/kg		0.04	17-FEB-12
C1 Benzofluoranthenes/Benzopyrenes			<0.040		mg/kg		0.04	17-FEB-12
C1 Acenaphthenes			<0.040		mg/kg		0.04	17-FEB-12
C1 Biphenyls			<0.040		mg/kg		0.04	17-FEB-12
C1 Dibenzothiophenes			<0.040		mg/kg		0.04	17-FEB-12
C1 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	17-FEB-12
C1 Fluorenes			<0.040		mg/kg		0.04	17-FEB-12
1-Methylnaphthalene			<0.010		mg/kg		0.01	17-FEB-12
2-Methylnaphthalene			<0.010		mg/kg		0.01	17-FEB-12
C1 Phenanthrenes/Anthracenes			<0.040		mg/kg		0.04	17-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX								
Tissue								
Batch	R2327022							
WG1429627-2	MB							
Naphthalene			<0.050		mg/kg		0.05	17-FEB-12
Perylene			<0.010		mg/kg		0.01	17-FEB-12
Phenanthrene			<0.010		mg/kg		0.01	17-FEB-12
Pyrene			<0.010		mg/kg		0.01	17-FEB-12
C2 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Fluoranthenes/Pyrenes			<0.040		mg/kg		0.04	17-FEB-12
C3 Fluorenes			<0.040		mg/kg		0.04	17-FEB-12
Retene			<0.010		mg/kg		0.01	17-FEB-12
Surrogate: Naphthalene d8			43.0		%		30-130	17-FEB-12
Surrogate: Acenaphthylene d8			69.0		%		50-150	17-FEB-12
Surrogate: Phenanthrene d10			81.0		%		50-150	17-FEB-12
Surrogate: Pyrene d10			82.0		%		50-150	17-FEB-12
Surrogate: Benzo(a)pyrene d12			53.0		%		50-150	17-FEB-12
Surrogate: Benzo(g,h,i)perylene d12			96.0		%		40-130	17-FEB-12
WG1429627-4	MS	L1113105-9						
Acenaphthene			84.7		%		50-150	17-FEB-12
Acenaphthylene			81.9		%		50-150	17-FEB-12
Anthracene			85.6		%		50-150	17-FEB-12
Benz(a)anthracene			94.5		%		50-150	17-FEB-12
Benzo(a)pyrene			73.2		%		50-150	17-FEB-12
Benzo(e)pyrene			83.3		%		50-150	17-FEB-12
Benzo(b&j)fluoranthene			84.7		%		50-150	17-FEB-12
Benzo(k)fluoranthene			67.8		%		50-150	17-FEB-12
Benzo(g,h,i)perylene			100.4		%		50-150	17-FEB-12
Biphenyl			79.9		%		50-150	17-FEB-12
C2 Naphthalenes			81.6		%		50-150	17-FEB-12
C3 Naphthalenes			88.9		%		50-150	17-FEB-12
C4 Phenanthrenes/Anthracenes			92.9		%		50-150	17-FEB-12
Chrysene			95.1		%		50-150	17-FEB-12
Dibenz(a,h)anthracene			89.9		%		50-150	17-FEB-12
Dibenzothiophene			87.6		%		50-150	17-FEB-12
Fluoranthene			93.0		%		50-150	17-FEB-12
Fluorene			89.1		%		50-150	17-FEB-12
Indeno(1,2,3-cd)pyrene			95.5		%		50-150	17-FEB-12

Quality Control Report

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY

Contact: ISABELLA LINGEHED

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-ALK-GCMS-EX		Tissue						
Batch	R2327022							
WG1429627-4	MS	L1113105-9						
1-Methylnaphthalene			71.4		%		50-150	17-FEB-12
2-Methylnaphthalene			70.5		%		50-150	17-FEB-12
C1 Phenanthrenes/Anthracenes			84.9		%		50-150	17-FEB-12
Naphthalene			59.8		%		50-150	17-FEB-12
Perylene			75.0		%		50-150	17-FEB-12
Phenanthrene			92.8		%		50-150	17-FEB-12
Pyrene			91.5		%		50-150	17-FEB-12
Retene			93.0		%		50-150	17-FEB-12

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Client: ALS SCANDINAVIA
PO BOX 511 S-183 25
TABY
Contact: ISABELLA LINGEHED

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

Page _____ of _____

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)			
Company: ALS Scandinavia				☐ Standard ☐ Other ☒ PDF ☒ Excel ☐ Digital ☐ Fax				☐ Regular (Standard Turnaround Times - Business Days) ☒ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT ☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT ☐ Same Day or Weekend Emergency - Contact ALS to Confirm TAT			
Contact: Isabella Lingehed				Email 1: info.ta@alsglobal.com							
Address: P.O. Box 511				Email 2: isabella.lingehed@alsglobal.com							
Phone: 4685275200				Fax:							
Invoice To: Same as Report ? ☒ Yes ☐ No				Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F/P)			
Hardcopy of Invoice with Report? ☐ Yes ☒ No				Job #:							
Company:				PO / AFE:							
Contact:				LSD:							
Address:				Quote #:							
Phone:				Fax:							
Lab Work Order # (lab use only)				ALS Contact: Brent Finnestad/Carl ee Corse				Sampler:			
Sample #				Sample Identification				Date (dd-mm-yy)			
				(This description will appear on the report)				Time (hh:mm)			
								Sample Type			
423339								Tissue			
424399								Sediment			
424401								Sediment			
424387								Tissue			
424389								Tissue			
424392								Tissue			
424393								Tissue			
424394								Tissue			
424396								Tissue			
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details											

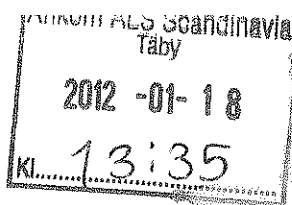
Please refer to mail sent from Carlee Corse to Isabella Lingehed 2011-11-17 and mail between Brent Finnestad and Isabella Lingehed 2012-02-03. Please just check with them before starting the analysis!

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)		SHIPMENT VERIFICATION (lab use only)	
Released by:	Date (dd-mm-yy)	Received by:	Date:	Verified by:	Date:
		BRT	10-Feb-12		
			11:15		
			710 °C		
Observations: Yes / No ?		If Yes add SIF			



Order Chemical analyses

In this shipment you will find 9 samples to be analysed for

PAH-ALK-GCMS-EX

Please refer to e-mail from Carlee Corse to Isabella Lingehed 21.nov. 2011

Please contact Carlee Corse before starting the analysis.

This is a list of the samples enclosed.

Sample type	ALS Number
Mussels	423339
Sediment	424399
Sediment	424401
Mussels	424387
Mussels	424389
Mussels	424392
Mussels	424393
Mussels	424394
Mussels	424396

Report should be sent latest **January 30th** to:

ALS Scandinavia AB
Att: Per Ivarsson
P.O Box 511
S-183 25 Täby
Sweden

e-mail: info.ta@alsglobal.com

SÄKERHETSDATABLAD

BENZO(a)PYREN

1. NAMNET PÅ PRODUKTEN OCH FÖRETAGET

Handelsnamn	BENZO(a)PYREN
Synonymer	3, 4-BENZOPYREN, BENZO(d, e, f)CHRYSEN
Internt nr.	1762
Leverantör	AB GÖTEBORGS TERMOMETERFABRIK Södra Långebergsgatan 30 SE-421 32 Västra Frölunda Tel: 031-680490 Fax: 031-680717
Kontaktperson	Christer Wallin

2. SAMMANSÄTTNING / ÄMNE NAS KLASSIFICERING

Ämnen	EG nr.	CAS nr.	Halt	Symbol	R-fraser
BENZO(a)PYREN	200-028-5	50-32-8	98 %	T ,N	R-45, 46, 60, 61, 43, 50,

Se sektion 16 för förklaring av R-fraser

EG-indexnr	601-032-00-3
EG nr.	200-028-5
CAS nr.	50-32-8
Bruttoformel	C20H12

3. FARLIGA EGENSKAPER

ÖGON: kan irritera ögonen. HUDKONTAKT: kan ge irritation. FÖRTÄRING: kan ge illamående, kräkningar och diarré. INANDNING: kan irritera slemhinnorna. Kan ge cancer. Kan ge ärftliga genetiska skador. Kan ge nedsatt fortplantningsförmåga. Kan ge fosterskador. Kan ge allergi vid hudkontakt. Mycket giftigt för vattenorganismer, kan orsaka skadliga långtidseffekter i vattenmiljön.

4. FÖRSTA HJÄLPEN

Inandning	Flytta genast den skadade till frisk luft. Frisk luft, värme och vila.
Förtäring	Skölj munnen ordentlig med vatten. Icke medvetlösa bör dricka rikliga mängder mjölk/vatten och själva framkalla kräkning (evt. med hjälp av att sätta fingrarna i halsen). Omedelbar läkarhjälp eller transport till sjukhus.
Hudkontakt	Tvätta genast huden med tvål och vatten. Tag av förorenade kläder och fortsatt tvätta.
Stänk i ögonen	Skölj genast ögonen med mycket vatten.

5. ÅTGÄRDER VID BRAND

Brandsläckningsmedel	Spridd vattenstråle eller dimma, Pulver, skum eller CO ₂ ,
Brandbekämpning	Använd vatten för att kyla utsatta behållare och för att slå ner ångor. Undvik inandning av rökgaser.

6. ÅTGÄRDER VID SPILL / OAVSIKTLIGA UTSLÄPP

Saneringsmetoder	Undvik dammbildning. Hudkontakt och inandning av spill/damm/ånga måste undvikas. Använd lämplig skyddsutrustning. Samla upp i torra behållare.
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7. HANTERING OCH LAGRING

Förebyggande åtgärder vid hantering	UNDBIK ALL KONTAKT!
Förebyggande åtgärder vid lagring	Förvaras på kall, torr plats och i täta behållare. Skyddas mot ljus, också mot direkt solljus.
Lagringskategori	Lagras som giftigt ämne.

8. BEGRÄNSNING AV EXPONERINGEN / PERSONLIGA SKYDDSÅTGÄRDER

Gen.snitt 8t.exp. (Produkt)	0.20 mg/m ³ ,K
Ventilation	Arbeta i dragskåp.
Andningsskydd	Använd dammfiltermask vid risk för dammbildning. P2 (dammfilter, fint damm).
Skyddshandskar	Använd skyddshandskar av: Naturgummi eller plast.
Hudskydd	Använd lämpliga skyddskläder vid eventuell risk för hudkontakt.
Arbetshygieniska rutiner	Tvätta huden efter varje skift, före måltid, rökning och toalettbesök. Tvätta förorenade kläder innan de används igen. Förorenade kläder skall läggas i täta behållare före omhändertagande. Varna tvätt- eller renhållningspersonal för ämnens farliga egenskaper. Förtäring, rökning och vattensifon är inte tillåten på arbetsplatsen.

9. FYSIKALISKA OCH KEMISKA EGENSKAPER

Form/konsistens	Fast ämne. Pulver, stoft.	
Färg	Gul.	
Löslighetsbeskrivning	Olösligt i vatten. Lösligt i: Bensen, Kloroform, Lite lösligt i: Aceton, Etanol,	
Löslighetsfaktor (g/100g H2O, 20°C)	0.00	
Molekylvikt	352.32	
Kokpunkt (°C, intervall)	495	Tryck:
Smält/frys punkt (°C, intervall)	175 - 177	
Densitet/specifik vikt (g/ml)	1.40	Temperatur (°C):
Relativ ångdensitet (luft=1)	8.70	

10. STABILITET OCH REAKTIVITET

Stabilitet	Normalt stabil. Undvik: Ljus.
Reaktiva ämnen etc.	Starkt oxiderande ämne
Farliga sönderdelningsprodukter	Vid höga temperaturer bildas: Mycket giftiga gaser, ångor, rök av: Kolmonoxid (CO), Koldioxid (CO ₂),

11. TOXIKOLOGISK INFORMATION

Hälssofarlighetsinformation	Kan ge kontaktallergi. Misstänkt cancerframkallande för människor. Kan ge lungcancer. Eventuellt reproduktionstörande produkt. Känt eller misstänkt reproduktionsstörande ämne.
Upptagsvägar	Ingen upptagsväg angiven.
Målorgan	Andningsorganen, lungorna. Huden. Slemhinnor. Immunsystemet.

12. EKOTOXIKOLOGISK INFORMATION

Miljöskyddsåtgärder	Miljöfarlig vid utsläpp till vattendrag.
Nedbrytbarhet	Kemikalien är långsamt, ej lätt nedbrytbar.
Akut fisktoxicitet	Större utsläpp kan vålla akut förgiftning av fisk och andra vattenorganismer.

13. AVFALLSHANTERING

Destruktionsmetoder	Lämnas för destruktion enl lokala föreskrifter. Ventilera till frisk luft
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14. TRANSPORTINFORMATION

15. GÄLLANDE BESTÄMMELSER

Farosymboler



Riskfraser	R-45 Kan ge cancer. R-46 Kan ge ärftliga genetiska skador. R-60 Kan ge nedsatt fortplantningsförmåga. R-61 Kan ge fosterskador. R-43 Kan ge allergi vid hudkontakt. R-50/53 Mycket giftigt för vattenlevande organismer, kan orsaka skadliga långtids effekter i vattenmiljön.
Skyddsfraser	S-53 Undvik exponering - Begär specialinstruktioner före användning. S-45 Vid olycksfall, illamående eller annan påverkan, kontakta omedelbart läkare. Visa om möjligt etiketten. S-60 Detta material och dess behållare skall tas om hand som farligt avfall. S-61 Undvik utsläpp till miljön. Läs särskilda instruktioner/varuinformationsblad.
Referenslistor	KIFS 2005:5 Cancerframkallande Grupp C (AFS). Reproduktionsstörande ämne. Grupp E (AFS).
EG nr.	200-028-5
Övrig information	EG-märkning

16. ÖVRIG INFORMATION

Förklaringar till R-fraser i sektion 2	R-45 Kan ge cancer. R-46 Kan ge ärftliga genetiska skador. R-60 Kan ge nedsatt fortplantningsförmåga. R-61 Kan ge fosterskador. R-43 Kan ge allergi vid hudkontakt. R-50/53 Mycket giftigt för vattenlevande organismer, kan orsaka skadliga långtids effekter i vattenmiljön.
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*** Information som är reviderad sedan förra versionen av Säkerhetsdatabladet**

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