Annex XV dossier

PROPOSAL FOR IDENTIFICATION OF A SUBSTANCE AS A CMR CAT 1 OR 2, PBT, vPvB OR A SUBSTANCE OF AN EQUIVALENT LEVEL OF CONCERN

Substance Name: Anthracene oil, anthracene paste

EC Number: 292-603-2

CAS Number: 90640-81-6

Submitted by: Germany

Version: August 2009

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PROPOSAL FOR IDENTIFICATION OF A SUBSTANCE AS A CMR CAT 1 OR 2, PBT, VPVB OR A SUBSTANCE OF AN EQUIVALENT LEVEL OF CONCERN

Substance Name: Anthracene oil, anthracene paste

EC Number: 292-603-2

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- *It is proposed to identify the substance as a PBT according to Article 57 (d).*
- *It is proposed to identify the substance as a vPvB according to Article 57 (e).*

Summary of how the substance meets the CMR (Cat 1 or 2), PBT or vPvB criteria, or is considered to be a substance of an equivalent level of concern

Anthracene oil, anthracene paste is a UVCB substance consisting of different constituents, among them various PAH. One relevant constituent is anthracene which is present in anthracene oil, anthracene paste in the range of 15-50 %. Anthracene has been placed on the Candidate List due to the identification as a PBT-substance. Moreover, anthracene oil consists of further PAH in concentrations above 0.1% (w/w). One constituent, phenanthrene, fulfils the PBT and vPvB criteria, too.

Hence, anthracene oil, anthracene paste, anthracene paste fulfils the PBT and the vPvB-criteria according article 57 d) and e) of the REACH regulation.

Registration number(s) of the substance or of substances containing the substance:

JUSTIFICATION

1 IDENTITY OF THE SUBSTANCE AND PHYSICAL AND CHEMICAL PROPERTIES

1.1 Name and other identifiers of the substance

Chemical Name: Anthracene oil, anthracene paste

EC Number: 292-603-2

CAS Number: 90640-81-6

IUPAC Name:

1.2 Composition of the substance

The anthracene oil, anthracene paste derivates are complex and have variable compositions.

According to the EC inventory: the anthracene-rich solid (EC No. 292-603-2) is obtained by the crystallization and centrifuging of anthracene oil. It is composed primarily of anthracene, carbazole and phenanthrene. The concentration range reported in the following refers to the data provided by industry in the IUCLID 5 files.

The most relevant compounds are listed below:

Chemical Name: Anthracene

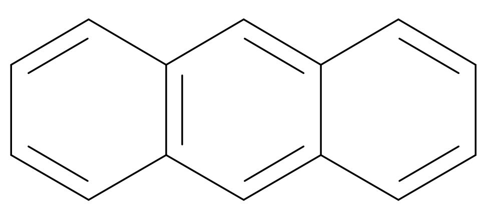
EC Number: 204-371-1

CAS Number: 120-12-7

IUPAC Name: Anthracene

Molecular Formula: C14H10

Structural Formula:

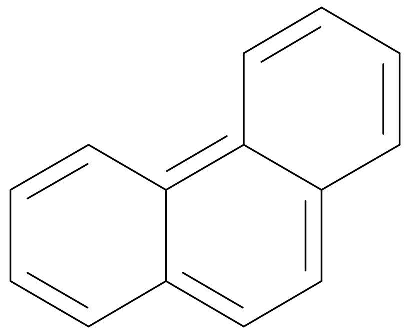


Molecular Weight: 178.23

Typical concentration (% w/w):

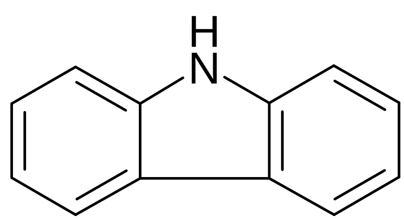
Concentration range (% w/w): 15-50

Chemical Name:	Phenanthrene
EC Number:	201-581-5
CAS Number:	85-01-8
IUPAC Name:	Phenanthrene
Molecular Formula:	C14H10
Structural Formula:	



Molecular Weight:	178.23
Typical concentration (% w/w):	
Concentration range (% w/w):	5-30

Chemical Name:	Carbazole
EC Number:	201-696-0
CAS Number:	86-74-8
IUPAC Name:	*9H*-carbazole
Molecular Formula:	C12H9N
Structural Formula:	



Molecular Weight:	167.21
Typical concentration (% w/w):	
Concentration range (% w/w):	5-30

1.3 Physico-chemical properties

Table 1: Summary of physico-chemical properties anthracene oil, anthracene paste (CAS Number 90640-81-6)

REACH ref Annex, §	Property	IUCLID section	Value	
VII, 7.1	Physical state at 20°C and 101.3 kPa	4.1	solid	IUCLID data file
VII, 7.2	Melting/freezing point	4.2	120-200 °C	IUCLID datafile; depending on the concentration of the different substances
VII, 7.3	Boiling point	4.3	300-350 °C (at 1013.25 Pa)	IUCLID datafile; depending on the concentration of the different substances
VII, 7.5	Vapour pressure	4.6	$9.4*10^{-4}$ - 0.091 Pa (at 20 °C)	IUCLID datafile; depending on the concentration of the different substances
VII, 7.7	Water solubility	4.8	0.047 - 1.6 mg/L (at 25 °C)	IUCLID datafile; depending on the concentration of the different substances
VII, 7.8	Partition coefficient n-octanol/water (log value)	4.7 partition coefficient	4.57 – 4.68 (at 25 °C)	IUCLID datafile; depending on the concentration of the different substances

2 MANUFACTURE AND USES

Not relevant for this type of dossier.

3 CLASSIFICATION AND LABELLING

3.1 Classification in Annex VI of Regulation (EC) No 1272/2008

Anthracene oil, anthracene paste has index number 648-103-00-5 in Annex VI, part 3, Tables 3.1 and 3.2 of Regulation (EC) No 1272/2008.

Its classification according to part 3 of Annex VI, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) No 1272/2008) is provided in Table 2.

Table 2: Classification and labelling of anthracene oil, anthracene paste according to Annex VI, part 3, Table 3.2 of Regulation (EC) No 1272/2008.

Name	CAS-No	Index-No	Classification	Labelling
Anthracene oil, anthracene paste #	90640-81-6	648-103-00-5	Carc. Cat. 2; R45*	T; R45; S 53 – 45

#The classification and label shown for this substance applies to the dangerous property indicated by the risk phrases in combination with the category of danger shown. Manufacturers, importers and downstream users of this substance shall be obliged to carry out an investigation to make themselves aware of the relevant and accessible data which exists for all other properties to classify and label the substance. The final label shall follow the requirements of section 7 of Annex VI to Directive 67/548/EEC; The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.1 % w/w benzene (EINECS-No. 200-753-7) and less than 0.005 w/w benzo[a]pyrene (EINECS-No. 200-028-5).*

The harmonised classification and labelling of anthracene oil, anthracene paste as hazardous substances according to Regulation (EC) No 1272/2008 (Annex VI, part 3, Table 3.1) is provided in Table 3.

Table 3: Classification and labelling of anthracene oil, anthracene paste according to Annex VI, part 3, Table 3.1 of Regulation (EC) No 1272/2008.

Name	Cas-No	Index-No	Classification	Labelling
Anthracen oil, anthracene paste[#]	90640-81-6	648-079-00-6	Carc. Cat. 1B* H350	GHS08 Dgr H350

[#] The classification and labelling shown for this substance applies to the hazardous property(ies) indicated by the hazard statement(s) in combination with the hazard class(es) and category(ies) shown. The requirements of Article 4 (Regulation (EC) No. 1272/2008) for manufacturers, importers or downstream users of this substance apply to all other hazard classes and categories.
** The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.1 % w/w benzene (EINECS-No. 200-753-7) and less than 0.005 w/w benzo[a]pyrene (EINECS-No. 200-028-5).*

4 ENVIRONMENTAL FATE PROPERTIES

4.1 Degradation

4.1.1 Stability

4.1.1.1 Phototransformation

Photolysis in the troposphere results in the formation of reactive hydroxyl (OH) and nitrate (NO_3) radicals and ozone (O_3), which react as oxidizing agent with organic compounds, like PAHs. These radical and ozone reactions comprise mainly the degradation of gas-phase PAH (Calvert et al., 2002). The atmospheric behaviour of the main constituents of anthracene oil, anthracene paste[1] is shown below in Table 4.

Table 4: Phototransformation of the relevant constituents present in anthracene oil, anthracene paste. Data are taken from the Annex XV transitional report for coal tar pitch, high temperature (The Netherlands - Bureau REACH, 2009).

PAH (number of rings)	Representative lifetime in air with respect to reaction with			
	OH		NO_3	O_3
	Summer	Winter		
Phenanthrene (2)	9.0 h	1.9 d	-	-
Carbazole (2) [a)]	9.6 h	-	-	-

a) Especially calculated for this dossier with AOPwin v1.91

For these substances the transformation rate in particle phase is expected to be lower. Particle phase transformation is, however, not assumed to be of relevance for the overall atmospheric lifetime, because e.g. only up to 3 % of atmospheric anthracene has been observed to appear in particle phase (European Chemicals Agency, 2008d).

Environmentally relevant exposure occurs in the whole water column and, in the case of anthracene oil, anthracene paste, especially in sediment and soil. Photodegradation of anthracene oil, anthracene paste can be expected to be a relevant removal pathway in the environment only in very shallow clear waters and in the first few centimetres layer of the water column. Therefore aquatic photodegradation is not considered to have relevant impact on the overall persistency of anthracene in the environment.

4.1.1.2 Hydrolysis

Hydrolysis as a way of abiotic degradation can be considered as not relevant for the main substances of the constituents because of their chemical structures. E.g. the constituent anthracene is stable against hydrolysis, photochemical transformation in water and sediments. This has been observed in laboratory and in “in situ” experiments. Half-lives for primary photodegradation in water have been reported in the range of 20 minutes to 125 hours depending on the experimental

[1] Please note that the data relevant for the constituent anthracene are not shown in this dossier, since anthracene has already been identified as a PBT substance (European Chemicals Agency, 2008d)

conditions used. The highest value corresponds to photolysis in winter conditions. Anthraquinone has been identified as the main abiotic degradation product of anthracene (European Chemicals Agency, 2008d). Because of the similar chemical structure (consisting of aromatic rings) similar assumptions for hydrolytic behaviour of the other anthracene oil, anthracene paste constituents can be made.

4.1.2 Biodegradation

4.1.2.1 Biodegradation estimation

4.1.2.2 Screening tests

The PAH listed in the table 4 below were allocated on the basis of model calculations (Mackay et al., 1992). These half-lives were applied in the Annex XV transitional report of coal tar pitch, high temperature (The Netherlands - Bureau REACH, 2009).

Table 5: Half-life classes of phenanthrene (The Netherlands - Bureau REACH, 2009)

Substance	**Water**		**Soil**		**Sediment**	
	class	**Half-life [d]**	**class**	**Half-life [d]**	**class**	**Half-life [d]**
Phenanthrene	4	13 – 42	6	125 – 420	7	420 – 1250

In a 28 day ready biodegradability test (MITI I, OECD 301C) using 100 mg l^{-1} PAH, respectively, and 30 mg l^{-1} sludge readily biodegradation was detected for phenanthrene and no biodegradability for carbazole was measured (MITI-List, 2002).

Coover and Sims tested the persistence of PAHs in an unacclimated agricultural sandy loam soil in dependence of the temperature (Coover and Sims, 1987). Due to the method used for extraction and analysis, it remains unclear to which extent evaporation, adsorption and biodegradation may have contributed to the elimination process. The soil was spiked with a standard solution of 16 PAHs and incubated for 240 days. At 10°C 36% of phenanthrene was remaining. With increasing temperature the degradation increased to 19% (2%) of remaining phenanthrene, at 20°C (30°C).

4.1.2.3 Simulation tests

<u>Biodegradation in soil</u>

Biodegradation rates of several PAH in soil depend on several factors like soil type, pH, moisture content, oxygen and nutrient contents and soil microbial population. In addition, vegetation has been observed to enhance microbial biodegradation in the rhizosphere. Some of these factors may also explain why the half-lives observed under laboratory conditions are much shorter than those obtained from long-term field-based experiments (The Netherlands - Bureau REACH, 2009). The results of Wild et al. (1991) and Wild and Jones (1993) demonstrate the difference of tests conducted for several PAHs in field conditions compared to laboratory tests. Wild et al. (1991) observed an elimination half-life of 5.7 years for phenanthrene. In this field experiment soils were enriched with PAH-contaminated sludge (Wild et al., 1991).

In another study Wild and Jones (1993) derived different half-lives in a microcosm study with four soil types (Wild and Jones, 1993). The elimination half-lives for phenanthrene were 83 – 193 days. It has to be noted that the latter results are derived from a greenhouse study and should therefore not be used for the P-assessment. Various studies on PAH-contaminated soils have shown that the number of PAH-degrading microorganisms and the degrading capacity are much higher in PAH-contaminated soils than in pristine soils indicating that adaptation has occurred (The Netherlands - Bureau REACH, 2009)

Grosser et al. studied the mineralization of ^{14}C-labeled carbazole in three different soils (Grosser et al., 1991). The mineralization was measured by application of serum bottle radiorespirometry. The incubation was set up for 184 days, but after 60 days the curves had become asymptotic. The mineralization of carbazole was measured between undetectable and 46% within the test duration.

The fate of several PAHs in two different soils were tested by Park et al. (Park et al., 1990).The half-life of phenanthrene was calculated in the range of 27 and 53 days (second soil: 13 – 18 days).

Table 6: Half-lives of relevant compounds present in anthracene oil, anthracene paste

Substance	Result	Reference
Phenanthrene	$DisDT_{50}$ =5.7 years (field study)	(Wild et al., 1991)
	$DisDT_{50}$ =83 – 193 d (microcosm study)	(Wild and Jones, 1993)
	Elimination half- life in two different soils: $DisDT_{50}$ = 27 – 53 d $DisDT_{50}$ = 13 – 18 d	(Park et al., 1990)
	$DisDT_{50}$ =8.5 years (field study)	(Wild et al., 1991)
Carbazole	Degradation half-life: $DegDT_{50}$ > 184 d (undetectable – 46% mineralization in 184 d)	

4.1.3 Summary and discussion of persistence

Anthracene which is one relevant constituent of anthracene oil, anthracene paste, has been placed on the Candidate List due to the identification as a PBT-substance (European Chemicals Agency, 2008d).

Moreover, anthracene oil, anthracene paste consists of further hardly degradable PAHs. The model calculations by Mackay et al. (1992) indicate that phenanthrene shows half-times in sediment > 180 days.

Screening studies (OECD TG 301C) show, that carbazole is not readily biodegradable (MITI-List, 2002). Further studies show relatively long dissipation times for carbazole ($DegDT_{50}$ > 184 d) (Grosser et al., 1991).

Additionally in a field study half-lives of 5.7 years for phenanthrene have been measured in soil (Wild et al., 1991).

Hence, constituents of anthracene oil, anthracene paste fulfil the P, and the vP criteria according to article 57 d) and e) of the REACH regulation.

4.2 Environmental distribution

4.2.1 Adsorption/desorption

The organic carbon partitioning coefficient $logK_{OC}$ was calculated for the main constituents using the equation $logK_{OC} = 0.81 * logK_{OW} + 0.10$ (European Chemicals Agency, 2008b). The results are shown below in Table 7.

Table 7: $LogK_{OW}$ and $logK_{OC}$ data of the relevant constituents present in anthracene oil, anthracene paste

Substance	CAS-No.	$logK_{OW}$ a)	$logK_{OC}$	K_{OC} (l/kg) b)
Phenanthrene	85-01-8	4.57	3.80	6,309
Carbazole	86-74-8	3.84	3.21	1,621

a) Values taken from Annex XV transitional report – CTPHT (The Netherlands - Bureau REACH, 2009) ; b) calculation of K_{OC} according to Guidance document R.7a

It can be concluded that anthracene oil, anthracene paste has a high potential to adsorb to organic matter and that it is not or only little mobile in soil and sediment.

4.2.2 Volatilisation

For the substance anthracene oil, anthracene paste no measured data are available at the moment. According to the constituent´s Henry' Law constants anthracene oil, anthracene paste is appreciated to be moderately volatile. The calculated values are shown in Table 8using the equation for Henry's law constant documented in Guidance Document R.16 (European Chemicals Agency, 2008b).

4.2.3 Distribution modelling

For the main components of anthracene oil, anthracene paste the behaviour in the wastewater treatment plant was calculated under the assumption that no biodegradation occurs (k=0/h). The results are shown in Table 8.

Table 8: Henry constants and volatilisation of main constituents in municipal waste water treatment plants.

Substance	Henry-constant[a] (Pa*m³/mol)	Distribution of PAH in STP[b]			
		% to air	% to water	% to sludge	% degraded
Phenanthrene	4.76	4.4	53.5	42.1	0.0
Carbazole	0.01	0.0	83.3	16.7	0.0

[a] calculation of Henry's law coefficient according to Guidance Document R.16 (European Chemicals Agency, 2008c); [b] values for distribution in STP calculated with SimpleTreat 3.0 (debugged version, 7 Feb 97)

Due to the partitioning to solids, low to medium concentrations of these PAHs in aqueous solutions are expected. The share of volatilised anthracene oil, anthracene paste constituents depends on the composition of the oil. Nevertheless volatilisation is not considered as a relevant route of distribution for anthracene oil, anthracene paste.

4.3 Bioaccumulation

4.3.1 Aquatic bioaccumulation

4.3.1.1 Bioaccumulation estimation

Based on the substance's $\log K_{OW}$ range from 4.57 to 4.68, anthracene oil, anthracene paste is expected to bioaccumulate.

4.3.1.2 Measured bioaccumulation data

Bioaccumulation of various PAH has been measured in various species. Several studies have been discussed in detail in the risk assessment report of anthracene (de Maagd, 1996; de Voogt et al., 1991; Djomo et al., 1996) and in the Annex XV transitional report for coal tar pitch, high temperature (McLeese et al., 1987; Petersen and Kristensen, 1998; Bruner et al., 1994). The most relevant studies and results are summarized in the following table.

Table 9: Bioaccumulation factors in fish for phenanthrene (The Netherlands - Bureau REACH, 2009)

Substance	Species	BCF	R[a)]	Test system [b)]	Type [c)]	References
Phenanthrene	***Fish***					
	Brachydanio rerio (eggs)	9120 [d)]	3	R	equilibrium (total = parent)	(Petersen and Kristensen, 1998)
	Brachydanio rerio (eggs)	12303 [d)]	3	R	k1/k2 (total = parent)	(Petersen and Kristensen, 1998)
	Brachydanio rerio (larvae)	7943 [d)]	3	R	equilibrium (total = parent)	(Petersen and Kristensen, 1998)
	Brachydanio rerio (larvae)	6309 [d)]	3	R	k1/k2 (total = parent)	(Petersen and Kristensen, 1998)
	Gadus morhua (larvae)	10715 [d)]	3	R	equilibrium (total = parent)	(Petersen and Kristensen, 1998)
	Gadus morhua (larvae)	14454 [d)]	3	R	k1/k2 (total = parent)	(Petersen and Kristensen, 1998)
	Clupea harengus (larvae)	20893 [d)]	3	R	equilibrium (total = parent)	(Petersen and Kristensen, 1998)
	Clupea harengus (larvae)	21380 [d)]	3	R	k1/k2 (total = parent)	(Petersen and Kristensen, 1998)
	Scophthalmus maximus	11220 [d)]	3	R	equilibrium (total = parent)	(Petersen and Kristensen, 1998)
	Scophthalmus maximus	11482 [d)]	3	R	k1/k2 (total = parent)	(Petersen and Kristensen, 1998)
	Brachydanio rerio	13400 [d)]	3	S	k1/k2 (total)	(Djomo et al., 1996)
	Pimephales promelas	6760	2	S	k1/k2 (parent)	(de Maagd, 1996)

a) Reliability score: 1-reliable without restrictions, 2-reliable with restrictions, 3-unreliable, 4-not assignable; b) S: static exposure system, F: flow-through system, R: static renewal system; c) k1/k2: uptake rate/depuration rate, total: total compound concentration (including transformation products), parent: parent compound concentration, NS, not steady state; d) based on dry weights

4.3.2 Terrestrial bioaccumulation

4.3.3 Summary and discussion of bioaccumulation

The bioaccumulation potential of anthracene has been described in the Annex XV-Dossier for identifying anthracene as a SVHC. Anthracene has been placed on the Candidate List due to the identification as PBT-substance (European Chemicals Agency, 2008a).

Moreover, further constituents of anthracene oil, anthracene paste show bioaccumulative potential, too. The BCF of phenanthrene resulted in values >5000 in several studies.

In summary, due to its constituents anthracene oil, anthracene paste fulfils the B and the vB criteria according to article 57 d) and e) of the REACH regulation.

4.4 Secondary poisoning

Assessment of the potential for secondary poisoning

5 HUMAN HEALTH HAZARD ASSESSMENT

Not relevant for this dossier

6 HUMAN HEALTH HAZARD ASSESSMENT OF PHYSICO-CHEMICAL PROPERTIES

Not relevant for this type of dossier.

7 ENVIRONMENTAL HAZARD ASSESSMENT

Anthracene oil, anthracene paste consists of anthracene (>0.1 %) which has already been identified as PBT-substance and has been added to the Candidate List (European Chemicals Agency, 2008d). Moreover, phenanthrene belongs to the 16 US-EPA PAH for which the aquatic NOEC values are < 0.01 mg/L (The Netherlands - Bureau REACH, 2009).

7.1 Aquatic compartment

7.1.1 Toxicity test results

7.1.1.1 Fish

Short-term toxicity to fish

Long-term toxicity to fish

7.1.1.2 Aquatic invertebrates

Short-term toxicity to aquatic invertebrates

Long-term toxicity to aquatic invertebrates

7.1.1.3 Algae and aquatic plants

7.1.1.4 Sediment organisms

7.1.1.5 Other aquatic organisms

7.1.2 Calculation of Predicted No Effect Concentration (PNEC)

7.1.2.1 PNEC water

7.1.2.2 PNEC sediment

7.2 Terrestrial compartment

7.2.1 Toxicity test results

7.2.1.1 Toxicity to soil macro organisms

7.2.1.2 Toxicity to terrestrial plants

7.2.1.3 Toxicity to soil micro-organisms

7.2.1.4 Toxicity to other terrestrial organisms

Toxicity to birds

Toxicity to other above ground organisms

7.2.2 Calculation of Predicted No Effect Concentration (PNEC_soil)

7.3 Atmospheric compartment

7.4 Microbiological activity in sewage treatment systems

7.4.1 Toxicity to aquatic micro-organisms

7.4.2 PNEC for sewage treatment plant

7.5 Calculation of Predicted No Effect Concentration for secondary poisoning (PNEC_oral)

7.6 Conclusion on the environmental classification and labelling

8 PBT AND VPVB ASSESSMENT

8.1 Comparison with criteria from annex XIII

Anthracene oil, anthracene paste is a UVCB substance consisting of a variety of different constituents. One main constituent is anthracene (15-50 %) which has already been identified as PBT-substance and has been added to the Candidate List (European Chemicals Agency, 2008d). Therefore also anthracene oil, anthracene paste fulfils the PBT criteria according to Annex XIII of the REACH regulation.

Moreover, anthracene oil, anthracene paste consists of further PAH which are hardly degraded. A study results in relatively long dissipation times for carbazole ($DegDT_{50}$ > 184 d) (Grosser et al., 1991). In a field study half lives of 5.7 years for phenanthrene, have been measured in soil (Wild et al., 1991). Therefore, anthracene-oil fulfils the P and the vP criteria according to Annex XIII of the REACH regulation.

In several studies conducted with different mollusc and fish species BCF values > 5000 were measured for phenanthrene (Petersen and Kristensen, 1998; de Maagd, 1996; Djomo et al., 1996). This means that several constituents of anthracene oil, anthracene paste meet the B and-/or vB criteria according to Annex XIII of the REACH regulation.

Phenanthrene belongs to the 16 US-EPA PAH for which the aquatic NOEC values are < 0.01 mg/L (The Netherlands - Bureau REACH, 2009). Therefore, anthracene oil, anthracene paste also meets the T criterion.

8.2 Conclusions on the PBT and vPvB assessment

Anthracene oil, anthracene paste is a UVCB substance consisting of a variety of different constituents. One main constituent is anthracene (15-50 %) which has already been identified as a PBT-substance and has been added to the Candidate List (European Chemicals Agency, 2008d). Therefore also anthracene oil, anthracene paste fulfils the PBT criteria according to Annex XIII of the REACH regulation.

Phenanthrene is a constituent of anthracene-oil (> 0.1%). Phenanthrene fulfils the PBT and the vPvB criteria. Therefore, it can be concluded that anthracene oil, anthracene paste meets the P, vP, B, vB and T criteria and hence is considered as a PBT and vPvB substance.

INFORMATION ON USE, EXPOSURE, ALTERNATIVES AND RISKS

1 INFORMATION ON EXPOSURE

Anthracene oil, anthracene paste is mainly used as an intermediate in the production of pure anthracene, which is intensively used in the production of artificial dyes. Anthracene oil, anthracene paste is also used in the following applications:

- Component in technical tar oils (e.g. for production of carbon black, heating oils, bunker fuel)
- Production of basic chemicals
- Intermediate for phyto-pharmaceutical and human-pharmaceutical products.
- Impregnation agent (mostly as wood preservative, sometimes for ropes and sailcloth)
- Component in tar paints for special application (e.g. underwater corrosion protection)
- Component of waterproof membranes for roofing and other sealing purposes
- Component of asphalt used for road construction
- Supplementary blast furnace reducing agent
- Industrial viscosity modifier

For these applications the emission to the environment is estimated to be relevant. The emission factor for the life cycle steps “use” and “service life” and the related PECs can not be assessed for these applications, because these are wide dispersive uses and the emission factor also depends on the local environmental conditions. Though, there is no information on the annual amount of anthracene oil used for these environmentally relevant applications.

CEFIC was asked to answer detailed questions concerning exposure in January 2009. An official written reply to the questionnaire was received in July after the Annex XV dossier had already been supplied to ECHA. However, only information on main uses of anthracene oils was given.

1.1 Emission characterisation

2 INFORMATION ON ALTERNATIVES

No information availlable

2.1 Alternative substances

2.2 Alternative techniques

3 RISK-RELATED INFORMATION

Water Framework Directive (WFD)

According to Decision 2455/2001/EC anthracene is on the priority list of the Water Framework Directive 2000/60/EC. Moreover, according to the latest common position adopted by the Council, it has been identified as a “priority hazardous substance” under the WFD, which means that cessation or phasing-out of discharges, emissions and losses of anthracene has to be envisaged (Common position adopted by the Council of 29th November 2007, 11486/07). As a first step in this direction environmental quality standards for anthracene is proposed in the common position: the annual average concentration of anthracene should not exceed 0.1 µg/l, while the maximum allowable concentration must not exceed 0.4 µg/l in inland and other surface waters.

OTHER INFORMATION

It has to be mentioned that anthracene oil, anthracene paste is only one example for a number of UVCB substances containing anthracene, irrespective from their origin (e.g. from chemical coal processing or from crude oil). Anthracene is a PBT-substance. Therefore all multi constituent substances and mixtures containing anthracene need to be considered for authorization in the future, since they also fulfil the PBT criteria according to Article 57 d) of the REACH-regulation. If those multi-constituent substances also contain further PAH, the vPvB criteria might be fulfilled, too.

References

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