

## **APPENDIX 1**

### **ESTIMATION OF AIR EMISSIONS AND DISPERSION MODEL**

# 1 INTRODUCTION

Below given estimations and modeling are obligatory component of EIA and should be prepared according to the specified legislative form. Detailed information on the description of the region and facility is given in the Report. Mitigation measures for emission reduction are not required. There isn't gas and dust separation equipment.

## 2 BASE CONSTRUCTION

Tab. A 1.1. Technical description of diesel construction equipment and vehicle

Type		Number, units	Capacity		Diesel fuel consumption, kg/h	Height of chimney, m	Diameter of chimney, m
			kW	hp			
Compressor station UKS-400V-P4M (piling, pneumatic hammer)		2	132	180	28.5	2.5	0.2
Dredging machine	Cutting head gear	1	552	125	125	3	0,3
	Pump gear	1	2281			3	0,4
	Diesel pump	1	59		24	0.15	0,1
"Caspian Eva" tug (Dredging)		1	339	461	75.3	5	0.2
Roller DU-47DM		2	44	60	4.4	2	0.15
Excavator, EK 270		2	132	180	28.3	2.5	0.15
Bulldozer, K-701		2	177	240	81.9	2	0.2
Truck crane KS-55729		2	250	330	48.2	1	0.1
Lifting crane DEK		1	177	240	28.7	1	0.1
Dump track KamAZ-5460		8	256	360	39.8	1	0.1
20-ton, truck		3	220	300	183.6	1	0.2
Car lift, 10 tons		1	60	81	12.1	1	0.1
Car lift, 15 tons		1	85	115	18.1	1	0.1

Tab. A1.2. List of air pollution sources

Number of air emission source		Name of air emission source
Number of air emissions source	Serial number of air emission source, connected to the pollution source	
1	2	3
Piling, pneumatic hammer operation		
1	1	Engine of compressor station № 1
2	1	Engine of compressor station № 2
Dredging		
3	1	Cutting head gear
4	1	Pump gear
6	1	Diesel pump - AN-2 (DNU-2)
Handling of inert material		
6001	1	Fugitive emission
6002	1	Fugitive emission
6003	1	Fugitive emission
6004	1	Fugitive emission
Welding operations		
6005	1	Electric welding unit № 1
6006	1	Electric welding unit № 2
6007	1	Gas welding unit
6008	1	Oxy-acetylene welding unit
Painting works		
6009	1	Equipment, painted surface
Bitumen heating		
5	1	Bitumen heater
6010	1	Fugitive emission of hydrocarbon vapours during bitumen heating
Total number of air emission sources is 16 units.		

There are 16 pollution sources in Atash base, including 6 – point sources and 10 – fugitive sources.

Tab. A1.3.Emissions from vehicle with diesel fuel consumption of 524 tons per year

Pollutant	Specific emissions during combustion of 1 ton of diesel fuel, t/g	Emissions during diesel fuel combustion, t/year
Carbon monoxide	0.047	24.62800
Hydrocarbons	0.019	9.95600
Aldehyde	0.0034	1.78160
Soot	0.0092	4.82080
Benzpyrene	0.00000014	0.000007
Nitrogen oxides	0.033	17.29200
Sulphur dioxide	0.01	5.24000
<b>Total</b>		<b>63.718</b>

Tab. A1.4. Air emission sources

Production type, № of workshop, site, etc.	# of pollution source	# of emission source	Name of air emission source	Name of goods produced	Operation period of air emission source, hours		Pollutant	Code of pollutant	Amount of pollutants, emitted by the emission source, t/year
					day	year			
Piling	1	1	Engine of compressor station #1		653		Nitrogen dioxide	301	0.743610
							Soot	328	0.037181
							Sulphur dioxide	330	0.092951
							Carbon monoxide	337	0.483347
							Benzpyrene	703	0.000001
							Formaldehyde	1325	0.009295
							Kerosene	2732	0.223083
		2	Engine of compressor station #2		653		Nitrogen dioxide	301	0.743610
							Soot	328	0.037181
							Sulphur dioxide	330	0.092951
							Carbon monoxide	337	0.483347
							Benzpyrene	703	0.000001
							Formaldehyde	1325	0.009295
							Kerosene	2732	0.223083
Dredging	3	1	Dredging machine cutting head gear		192		Nitrogen dioxide	301	0.956160
							Soot	328	0.047808
							Sulphur dioxide	330	0.119520
							Carbon monoxide	337	0.621504
							Benzpyrene	703	0.000001
							Formaldehyde	1325	0.011952
							Kerosene	2732	0.286848
							Nitrogen dioxide	301	3.502080

Production type, № of workshop, site, etc.	# of pollution source	# of emission source	Name of air emission source	Name of goods produced	Operation period of air emission source, hours	Pollutant	Code of pollutant	Amount of pollutants, emitted by the emission source, t/year
					day	year		
						Soot	328	0.175104
						Sulphur dioxide	330	0.437760
						Carbon monoxide	337	2.276352
						Benzpyrene	703	0.000005
						Formaldehyde	1325	0.043776
						Kerosene	2732	1.050624
	6		Diesel pump - AN-2 (DNU-2)		192	Nitrogen dioxide	301	0.164460
						Soot	328	0.011474
						Sulphur dioxide	330	0.017211
						Carbon monoxide	337	0.114739
						Benzpyrene	703	0.000000
						Formaldehyde	1325	0.002295
						Kerosene	2732	0.057370
Handling of inert material	6001	1	Fugitive emission		6588	Inorganic dust, 70-20 % SO <sub>2</sub>	2908	5.568974
	6002	1	Fugitive emission		143	Limestone dust	2902	6.718464
	6003	1	Fugitive emission		149	Limestone dust	2902	6.998400
	6004	1	Fugitive emission		193	Inorganic dust, 70-20 % SO <sub>2</sub>	2908	31.842720
Welding operations	6005	1	Fugitive emission		1000	Welding aerosol, including:	5000	0.006000
		1				Manganese and its oxides	143	0.000690
	6006	1	Fugitive emission		1000	Welding aerosol, including:	5000	0.006000
						Manganese and its oxides	143	0.000690
	6007	1	Fugitive emission		5000	Nitrogen oxides	304	0.075000
	6008	1	Fugitive emission		1400	Nitrogen oxides	304	0.031973

Production type, № of workshop, site, etc.	# of pollution source	# of emission source	Name of air emission source	Name of goods produced	Operation period of air emission source, hours		Pollutant	Code of pollutant	Amount of pollutants, emitted by the emission source, t/year
					day	year			
Painting	6009	1	Fugitive emission			100	White spirit	2752	0.048000
							Xylool	616	0.032000
Bitumen heating	5	1	Bitumen heater chimney			11	Nitrogen dioxide	301	0.000120
							Soot	328	0.000009
							Sulphur dioxide	330	0.000211
							Carbon monoxide	337	0.000521
	6010	1	Fugitive emission			4	Hydrocarbons	401	0.000028
<b>Total</b>									<b>64.404398</b>
								143	0.001380
								301	6.110040
								304	0.106973
								328	0.308756
								330	0.760605
								337	3.979809
								401	0.000028
								616	0.032000
								703	0.000008
								1325	0.076613
								2732	1.841008
								2752	0.048000
								2902	13.716864
								2908	37.411694
								5000	0.012000

Note: Emissions of manganese and its compounds are included into the welding aerosol emissions.

Tab. A1.5. Total air emissions, their treatment and purification (for the whole enterprise), t/year

Code of pollutant	Name of pollutant	Amount of pollutants emitted from the emission source	Including		Out of emissions delivered for purification		Total air emission
			Emitted without purification	To be purified	Emitted into the air	Trapped and processed	
						Actually	
<b>Including</b>		<b>64.404398</b>	<b>64.404398</b>				<b>64.404398</b>
<b>Solid</b>		<b>51.449314</b>	<b>51.449314</b>				<b>51.449314</b>
143	Manganese and its oxides	0.001380	0.001380				0.001380
328	Soot	0.308756	0.308756				0.308756
2902	Limestone dust	13.716864	13.716864				13.716864
2908	Inorganic dust, 70-20 % SO <sub>2</sub>	37.411694	37.411694				37.411694
5000	Welding aerosol, including:	0.012000	0.012000				0.012000
<b>Gaseous</b>		<b>12.955084</b>	<b>12.955084</b>				<b>12.955084</b>
301	Nitrogen dioxide	6.110040	6.110040				6.110040
304	Nitrogen oxides	0.106973	0.106973				0.106973
330	Sulphur dioxide	0.760605	0.760605				0.760605
337	Carbon monoxide	3.979809	3.979809				3.979809
401	Hydrocarbon	0.000028	0.000028				0.000028
616	Xylol	0.032000	0.032000				0.032000
703	Benzpyrene	0.000008	0.000008				0.000008
1325	Formaldehyde	0.076613	0.076613				0.076613
2732	Kerosene	1.841008	1.841008				1.841008
2752	White spirit	0.048000	0.048000				0.048000

### 3 BASE OPERATION

Tab. A1. 6. List of air emission sources

Number of air emission source		Name of air emission source
Number of air emissions source	Serial number of air emission source, connected to the pollution source	
Power building		
1	1-3	3 boilers
2	1	Diesel generator
Tank farm		
3	1-3	<b>3 tanks</b>
4	1-2	Manholes of vessel fuel tanks
<b>6001</b>	<b>1-2</b>	<b>2 pumps</b>
Maintenance shop		
<b>6002</b>	<b>1-7</b>	<b>Metal processing machines</b>
6003	1	Electric welding unit #1
6004	1	Electric welding unit #2
6005	1	Gas welding unit
6006	1	Gas cutter
5	1	Recharger
Paint shop		
6007	1	Air-painting equipment, painted surface
Support fleet		
6	1	Tug engine
		Vehicle
6008	1	Motor vehicle engines (traffic in the site)
<b>Total number of air emission sources is 26 units</b>		

There are 14 pollution sources in Atash base, including 6 – point sources and 8 – fugitive sources.

Tab. A1. 7. Air emission sources

Production type, № of workshop, site, etc.	# of pollution source	# of emission source	Name of air emission source	Name of goods produced	Operation period of air emission source, hours		Pollutant	Code of pollutant	Amount of pollutants, emitted by the emission source, t/year
					day	year			
Power building	1	1-3	Boilers		24	4320	Nitrogen dioxide	301	1.751350
							Soot	328	0.128304
							Sulphur dioxide	330	3.079296
							Carbon monoxide	337	7.589182
	2	1	Diesel generator		108		Nitrogen dioxide	301	0.216000
							Soot	328	0.010800
							Sulphur dioxide	330	0.027000
							Carbon monoxide	337	0.140400
							Benzpyrene	703	0.000000
							Formaldehyde	1325	0.002700
							Kerosene	2732	0.064800
Tank farm	3	1-3	Tanks		1084		Hydrocarbons	401	5.400000
	6001	1-2	Pumps		2169		Hydrocarbons	401	0.151805
	4	1-2	Manholes of vessel fuel tanks		1084		Hydrocarbons	401	4.337219
Maintenance shop	6002	1-7	Metal processing machines		2500		Soot	2902	0.030600
							Emulsol aerosols	2868	0.001127
	6003	1	Electric welding unit		500		Welding aerosol, including:	5000	0.003000
							Manganese and its oxides	143	0.000345
	6004	1	Electric welding unit		500		Welding aerosol, including:	5000	0.003000
							Manganese and its oxides	143	0.000345
	6005	1	Gas welding unit		2450		Nitrogen oxides	304	0.037500
	6006	1	Gas cutter		1500		Nitrogen oxides	304	0.015987
	5	1	Recharger		840		Sulphuric acid	322	0.000680

Production type, № of workshop, site, etc.	# of pollution source	# of emission source	Name of air emission source	Name of goods produced	Operation period of air emission source, hours		Pollutant	Code of pollutant	Amount of pollutants, emitted by the emission source, t/year
					day	year			
Paint shop	6007	1	Air-painting equipment, painted surface			1500	White spirit	2752	0.480000
							White spirit	616	0.320000
Support fleet - tug	6	1	Tug engine			1095	Xylol	301	1.822080
							Nitrogen dioxide	328	0.091104
							Soot	330	0.227760
							Sulphur dioxide	337	1.184352
							Benzpyrene	703	0.000003
							Formaldehyde	1325	0.022776
							Kerosene	2732	0.546624
							Total		27.685449
								143*	0.000690
								301	3.789430
								304	0.053487
								322	0.000680
								328	0.230208
								330	3.334056
								337	8.913934
								401	9.889024
								616	0.320000
								703	0.000003
								1325	0.025476
								2732	0.611424
								2752	0.480000
								2868	0.001127
								2902	0.030600
								5000	0.006000

Note: emissions of manganese and its compounds are included into the welding aerosol emissions.

Tab. A1.8. . Total air emissions, their treatment and purification (for the whole enterprise), t/year

Code of pollutant	Name of pollutant	Amount of pollutants emitted from the emission source	Including		Out of emissions delivered for purification		Total air emission
			Emitted without purification	To be purified	Emitted into the air	Trapped and processed	
<b>Total</b>		<b>27.68545</b>	<b>27.68545</b>				<b>27.68545</b>
<b>Solid</b>		<b>0.266808</b>	<b>0.266808</b>				<b>0.266808</b>
143	Manganese and its oxides	0.000690	0.000690				0.000690
328	Soot	0.230208	0.230208				0.230208
2902	Suspended solids	0.030600	0.030600				0.030600
5000	Welding aerosol	0.006000	0.006000				0.006000
<b>Gaseous</b>		<b>27.41864</b>	<b>27.41864</b>				<b>27.41864</b>
301	Nitrogen dioxide	3.789430	3.789430				3.789430
304	Nitrogen oxides	0.053487	0.053487				0.053487
322	Sulphuric acid	0.000680	0.000680				0.000680
330	Sulphur dioxide	3.334056	3.334056				3.334056
337	Carbon monoxide	8.913934	8.913934				8.913934
401	Hydrocarbon	9.889024	9.889024				9.889024
616	Xylol	0.320000	0.320000				0.320000
703	Benzpyrene	0.000003	0.000003				0.000003
1325	Formaldehyde	0.025476	0.025476				0.025476
2732	Kerosene	0.611424	0.611424				0.611424
2752	White spirit	0.480000	0.480000				0.480000
2868	Emulsol aerosol	0.001127	0.001127				0.001127

Tab. A1.9 Air emissions from vehicle, with benzene consumption of 174.5 t/year.

Pollutant	Specific emissions during combustion of 1 ton of benzene, t/g	Emissions during benzene combustion, t/year
Carbon monoxide	0.4200000	7.329
Hydrocarbons	0.0460000	8.027
Aldehyde	0.0012000	0.2094
Soot	0.0011000	0.19195
Benzpyrene	0.0000001	0.00001745
Nitrogen oxides	0.0270000	4.7115
Carbon monoxide	0.0020000	0.349
Lead compounds	0.0003700	0.064565
Total		20.882

### 3.1 RESULTS OF MAXIMAL GROUND LEVEL CONCENTRATIONS ESTIMATION

Estimation of maximal ground level pollutant concentrations was performed using "Era 1.5" software module.

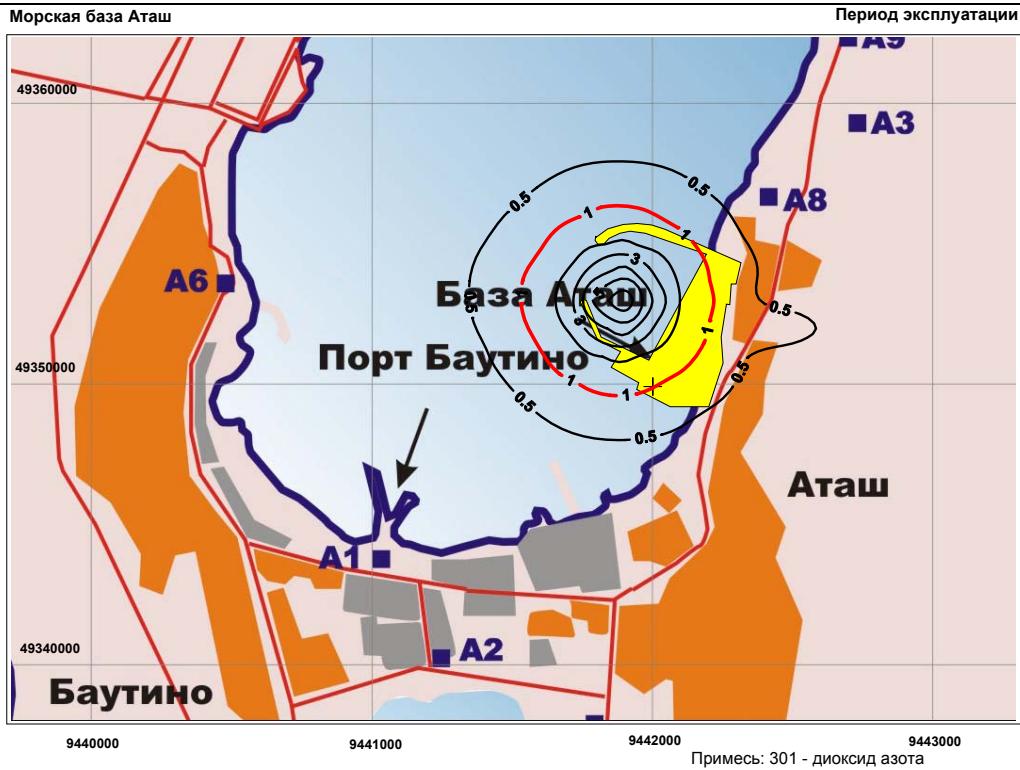
Grid pitch is 1,000m.

Estimated maximal ground level pollutant concentrations beyond the Base do not exceed MPC.

Pollutant emissions from Atash marine base over the operation period are to be assumed as Maximally Permitted Emission standards.

Fig. A1. 1 Maps of maximal ground level pollutant concentrations (from top to bottom: manganese and its compounds, nitrogen dioxides, nitrogen oxides, soot, sulphur dioxide, carbonic monoxide, hydrocarbons, xylol, benzpyrene, kerosene, white spirit, emulsol, suspended solids, welding aerosol,





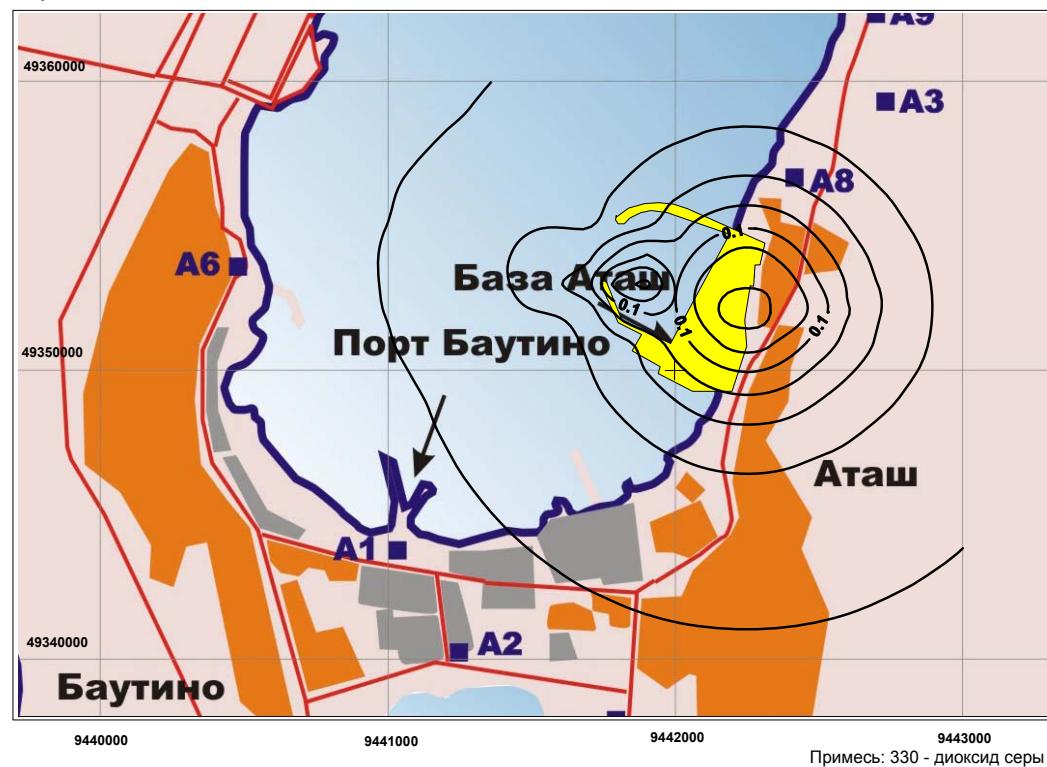
Морская база Аташ

Период эксплуатации



Морская база Аташ

Период эксплуатации



Морская база Аташ

Период эксплуатации



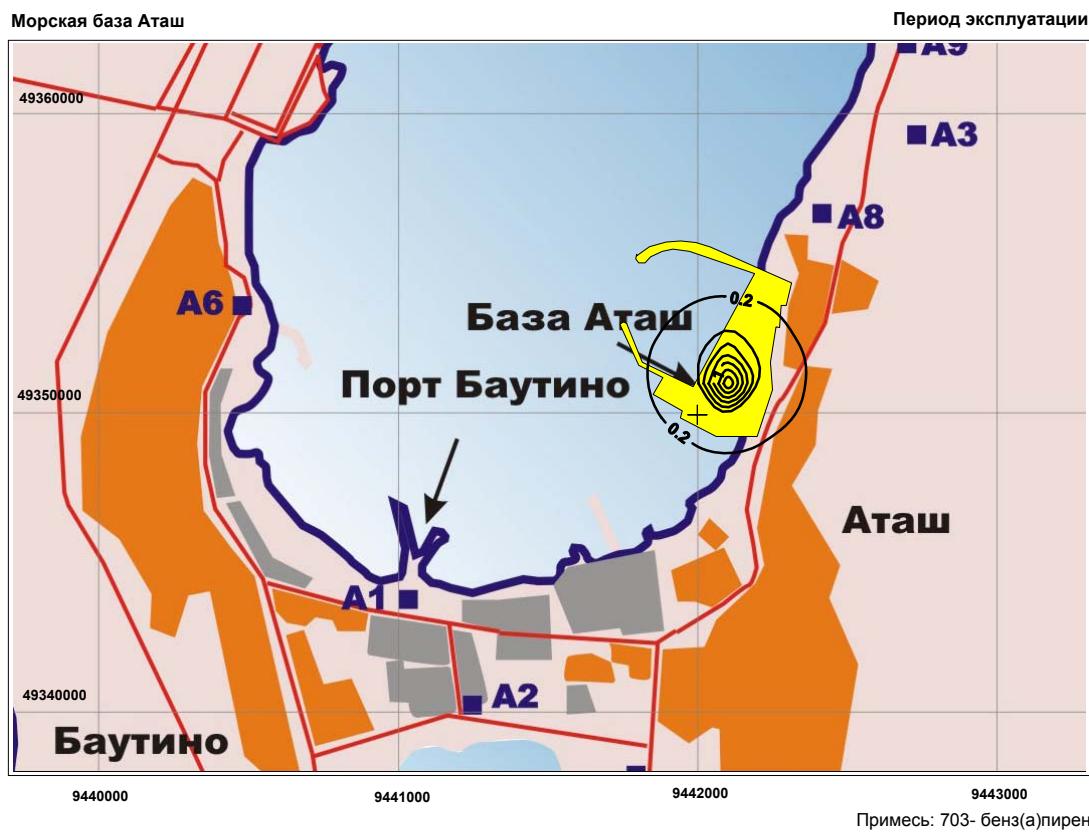
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Морская база Аташ

Период эксплуатации



Примесь: 401 - углеводороды







Морская база Аташ

Период эксплуатации



### 3.2 SANITARY PROTECTION AREA

Although estimated maximal ground level pollutant concentrations beyond the designed Atash marine base do not exceed 1MPC, sanitary protection zone towards Atash village should be established as 70m.

### 3.3 MEASURES ON THE REGULATION OF EMISSIONS DURING UNFAVORABLE METHEOROLOGICAL CONDITIONS

Mitigation measures to reduce air emissions during unfavorable meteorological conditions are not required.

### 3.4 EMERGENCY EMISSIONS AND MAJOR BLOWOUTS

Emissions will increase for short time during energy shutoff due to the operation of reserve diesel generator. Emissions from diesel generator are included into gross emissions of the facility.

**Fig. A1. 2 Emissions of nitrogen dioxides and sulphur dioxide during emergency diesel generator operation**



Code	Pollutant	MPC <sub>a.d.</sub> , mg/m <sup>3</sup>	MPC <sub>peak</sub> , mg/m <sup>3</sup>	SRLI	Hazard class	Emissions, t/year	a <sub>i</sub>	(M <sub>i</sub> /MPC <sub>a.d.</sub> ) <sup>ai</sup>
143	Manganese and its oxides	0.001	0.01		2	0.000690	1.3	0.617311
301	Nitrogen dioxide	0.04	0.085		2	3.789430	1.3	371.080443
304	Nitrogen oxides	0.06	0.4		3	0.053487	1	0.891450
322	Sulphuric acid	0.1	0.3		2	0.000680	1.3	0.001521
328	Soot	0.05	0.15		3	0.230208	1	4.604160
330	Sulphur dioxide	0.05	0.5		3	3.334056	1	66.681120
337	Carbon monoxide	3	5		4	8.913934	0.9	2.664731
401	Hydrocarbons	1.5	5		4	9.889024	0.9	5.459539
616	Xylol	0.2	0.2		3	0.32	1	1.600000
703	Benzpyrene	0.00001			1	0.000003	1.7	0.129153
1325	Formaldehyde	0.003	0.035		2	0.025476	1.3	16.132920
2732	Kerosene			1.2	3	0.611424	1	0.509520
2752	White spirit			1	3	0.480000	1	0.480000
2868	Emulsol aerosol			0.05	3	0.001127	1	0.022540
2902	Suspended solids	0.15	0.5		3	0.030600	1	0.204000
5000	Welding aerosol	0.15	0.5		3	0.006000	1	0.040000
<b>Total</b>						<b>27.685449</b>		<b>471.1</b>

The facility is referred to **hazard class IV**, as HC< 1000

## 4 ESTIMATION OF MAXIMAL GROUND LEVEL POLLUTANT CONCENTRATIONS

### 4.1 OPTIONS OF ESTIMATION

The main air pollution during Atash marine base construction will be due to the **exhaust gas** from diesel engines (facilities) of compressors, tug, dredging machine, construction equipment and vehicle, **dust** of inert materials and limestone during handling and transportation.

The most significant air pollution by exhaust gases will be at the stage of dredging, land reclamation and breakwater construction.

Dredging, land reclamation and breakwater construction are primary activities. There will be not other air emission sources in this period.

This stage of construction includes the following operations:

1. Dredging and loading of dumb barge (diesel generators of dredging machine);
2. Towing of dredging machine or barge (diesel facility of the tug);
3. Unloading of the barge (excavator, bulldozer)
4. Unloading of dump trucks (breakwater construction – dump truck engine, dust formation during limestone unloading)

Former three processes will be implemented in the various periods. The greatest emissions will

take place during operation of diesel generators at dredging machine (cutting head gear and pump gear).

#### **4.1.1 1 Option**

Maximal ground level pollutant concentrations in the air during dredging machine operation and breakwater construction were estimated in order to assess maximal potential air pollution by **exhaust gases of diesel generators**.

#### **4.1.2 2 Option**

Pollution by the dust of limestone and intern material will take place during dump truck unloading and transportation at the stage of breakwater and wharf construction (limestone), sand and gravel unloading and storage during building construction, base surface covering with sand and gravel.

Maximal ground level pollutant concentrations in the air during wharf construction were estimated in order to assess maximal potential air pollution by the **limestone dust**. Breakwater construction will be completed at the beginning of wharf construction.

Maximal ground level pollutant concentrations in the air during surface covering with sand and gravel were estimated in order to assess maximal potential air pollution by the inorganic dust.

#### **4.1.3 3 Option**

Estimation of air pollution during welding and painting operations.

#### **4.1.4 4 Option**

Estimation of air pollution by exhaust gases of construction equipment and vehicle during the construction of base buildings and facilities. Crane, car lift, bulldozer, roller will operate at the same time.

### **4.2 RESULTS**

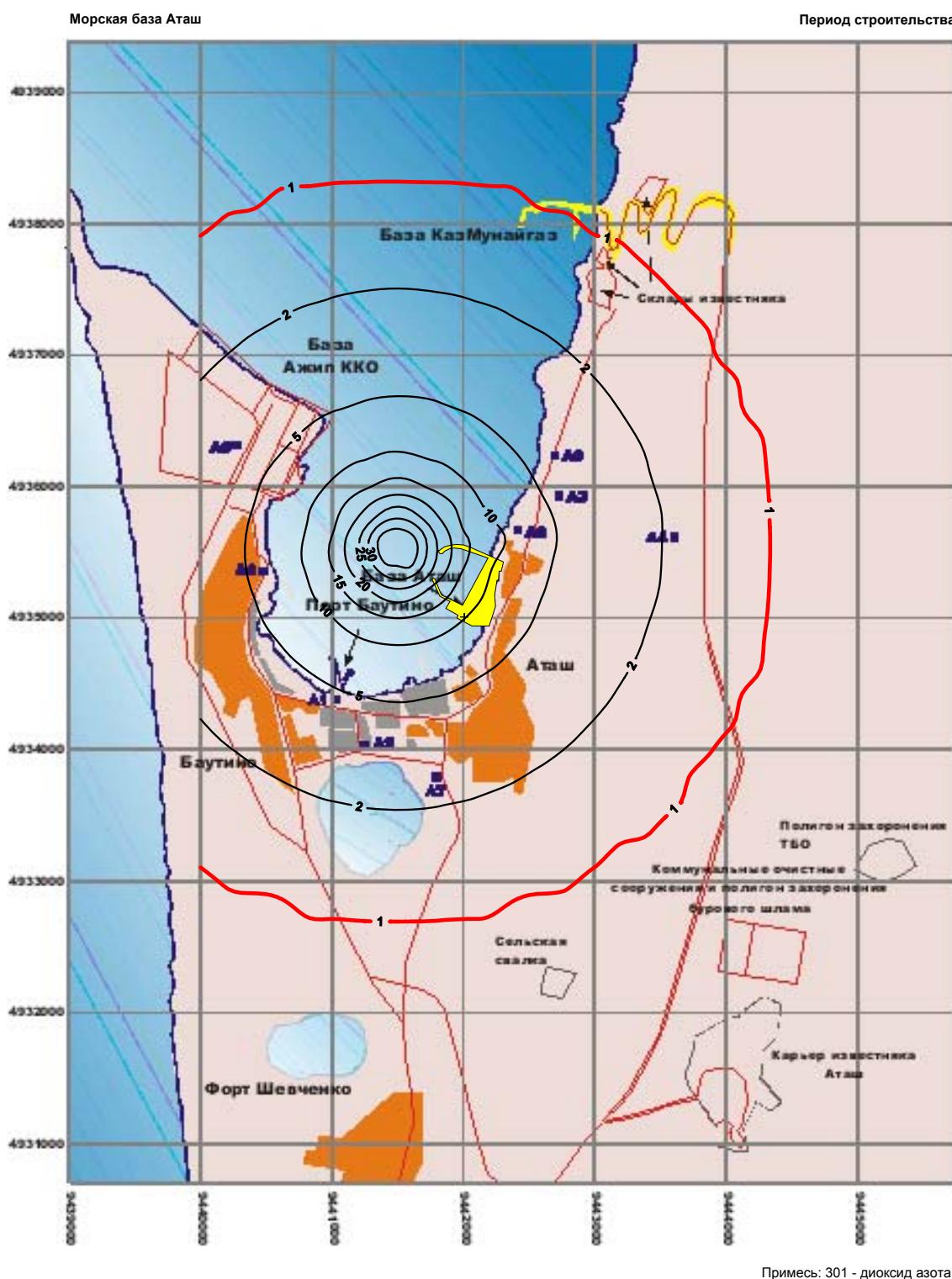
#### **4.2.1 1 Option**

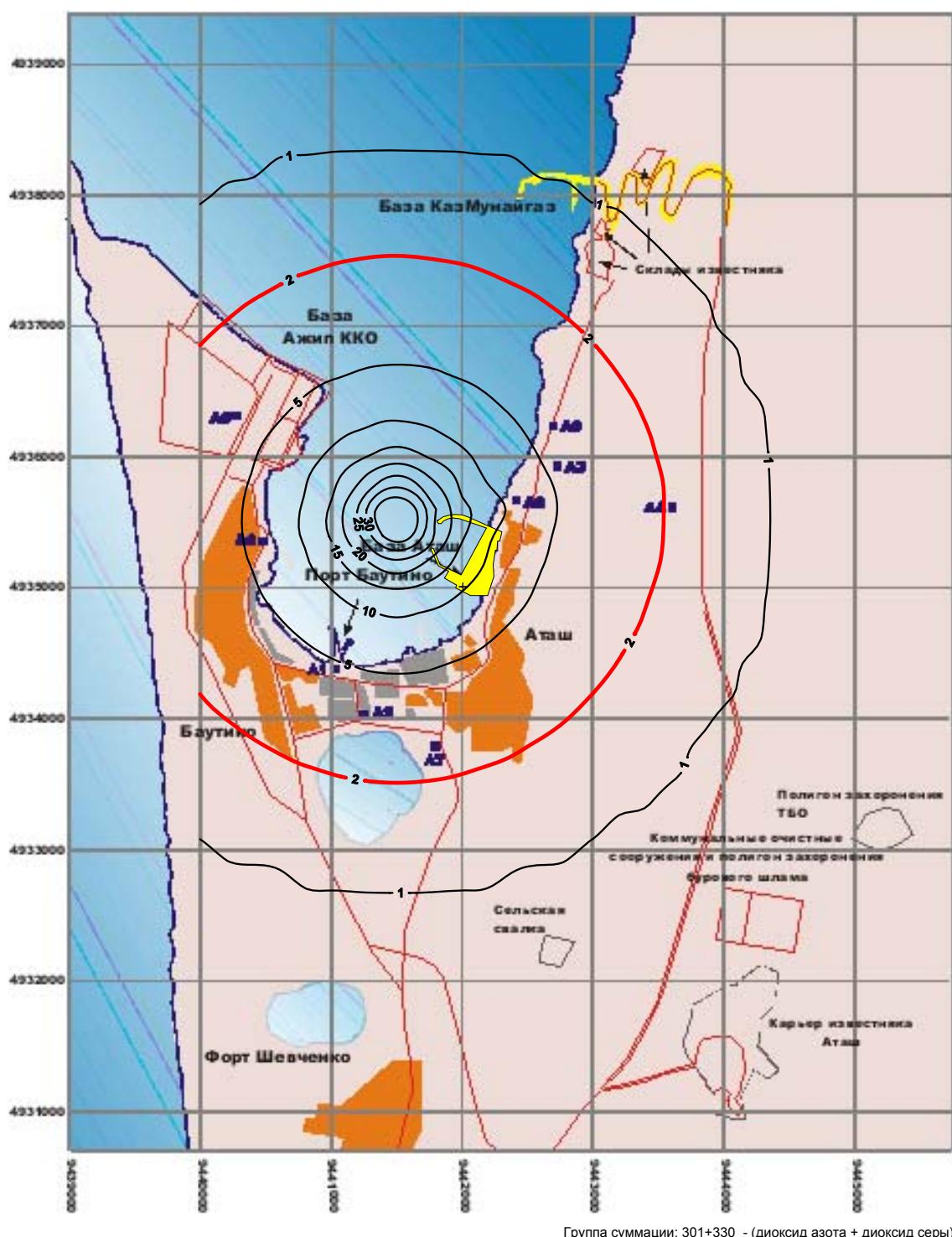
Tab. A1.12. Maximal ground level concentrations, in MPC shares

Code of pollutant	Pollutant	Maximal ground level concentration in Atash village, in MPC shares
301	Nitrogen dioxide	<b>3.07-9.70</b>
328	Soot	0.06-0.35
330	Sulphur dioxide	0.07-0.23
337	Carbon monoxide	0.07-0.16
401	Hydrocarbons	0.001-0.014
703	Benzpyrene	0.04-0.13
1325	Formaldehyde	0.10-0.50
2732	Kerosene	0.06-0.18
301+330	Nitrogen dioxide + sulphur dioxide	3.14-9.26

MPC exceedance is possible for nitrogen dioxide and summation group of nitrogen dioxide + sulphur dioxide. Maximal ground level concentrations can be up to 9.7MPC. Concentrations of other pollutants are below MPC.

**Fig. A1. 3 Maps of maximal ground level pollutant concentrations for Option 1 (from top downward – nitrogen dioxide, nitrogen dioxide + sulphur dioxide)**



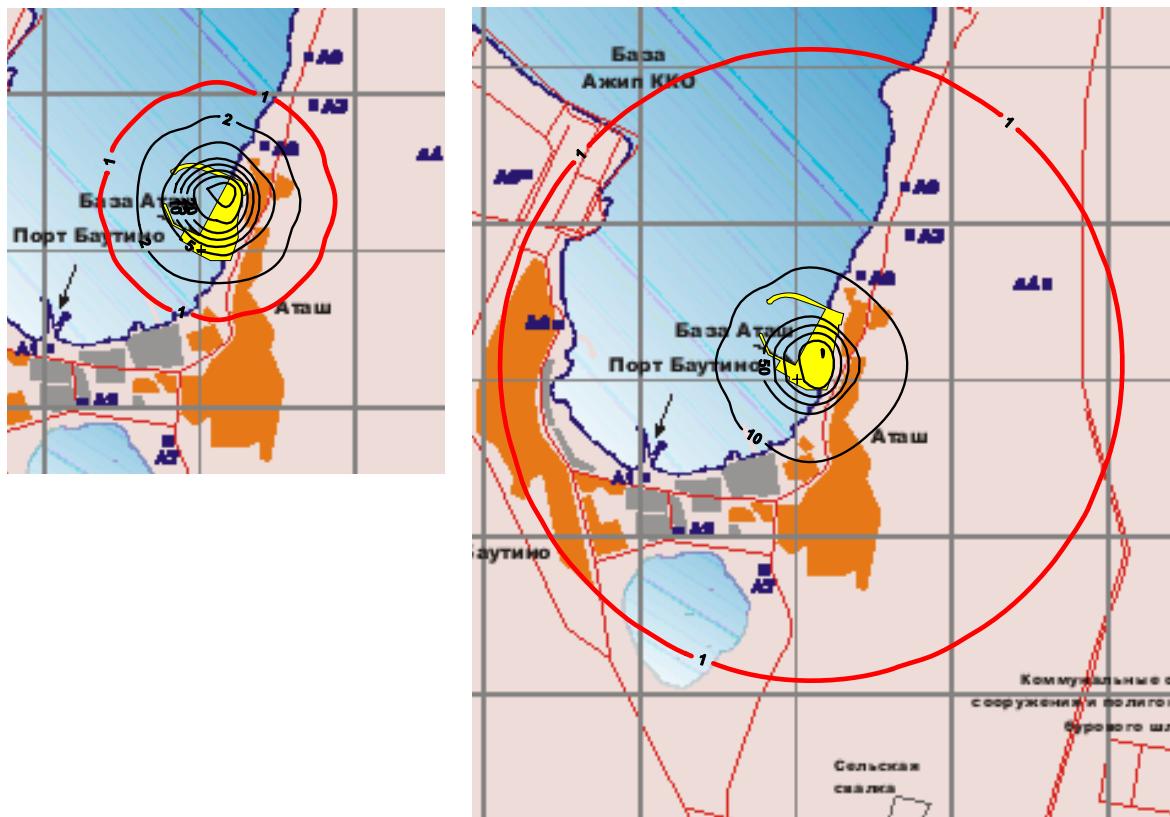


## 4.2.2 2 Option

Tab. A1.13. Maximal ground level concentrations, in MPC shares

Code of pollutant	Pollutant	Maximal ground level concentration in Atash village, in MPC shares
2902	Limestone dust	<b>0.473 -13.9</b>
29078	Inorganic dust, 70-20 % SO <sub>2</sub>	2.022-32.8

Maximal ground level concentrations of limestone dust and inorganic dust exceed MPC and in average are 0.473-13.9MPC and 2.022 – 32.8, correspondingly. Concentrations of inorganic dust at the border of the village adjacent to the Base can be up to 50MPC.

Fig. A1. 4 Maps of maximal ground level pollutant concentrations for Option 2 (from left to right – limestone dust, inorganic dust, 70-20 % SiO<sub>2</sub>)

## 4.2.3 3 Option

Tab. A1.14. Maximal ground level concentrations, in MPC shares

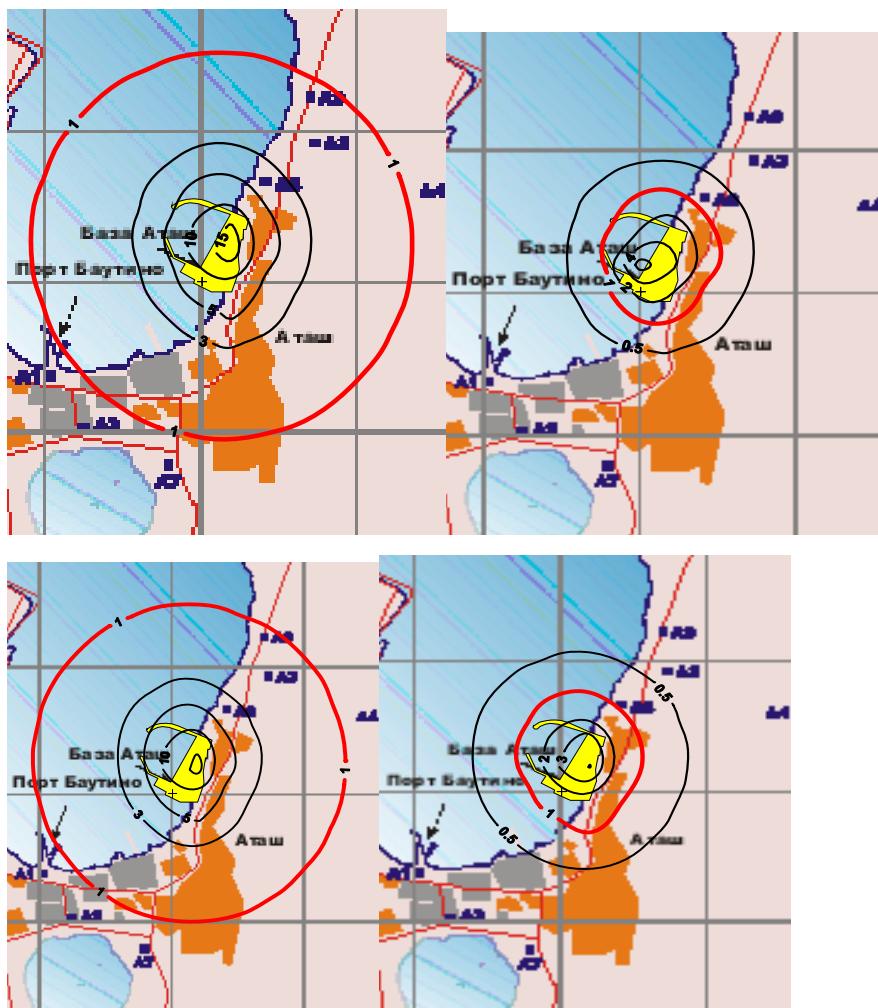
Code of pollutant	Pollutant	Maximal ground level concentration in Atash village, in MPC shares
143	Manganese and its compounds	<b>0.001-0.108</b>
304	Nitrogen oxides	0.003-0.13
616	Xylol	0.027-0.5
2752	White spirit	0.008-0.151
5000	Welding aerosol	0.0-0.02

MPC are not expected to be exceeded during painting and welding operations.

#### 4.2.4 4 Option

MPC can be exceeded for nitrogen dioxide (from 0.71 to 9.92MPC), soot (up to 1.92MPC), formaldehyde (from 0.168 to 2.47MPC) and summation group of nitrogen dioxide + sulphur dioxide (up to 10.43MPC) at the simultaneous operation of construction equipment.

**Fig. A1. 5 Maps of maximal ground level pollutant concentrations for Option 4 (from left to right and from top downward – nitrogen dioxide, soot, formaldehyde, nitrogen dioxide + sulphur dioxide)**



**Tab. A1.15. Maximal ground level concentrations, in MPC shares**

Code of pollutant	Pollutant	Maximal ground level concentration in Atash village, in MPC shares
301	Nitrogen dioxide	<b>0.71-9.92</b>
328	Soot	0.082-1.92
330	Sulphur dioxide	0.04-0.52
337	Carbon monoxide	0.056-0.279
401	Hydrocarbons	0.007-0.097
703	Benzpyrene	0.017-0.0336
1325	Formaldehyde	0.168-2.47
301+330	Nitrogen dioxide + sulphur dioxide	0.748-10.43

## 5 MITIGATION MEASURES FOR AIR EMISSION REDUCTION DURING UNFAVORABLE METHEOROLOGICAL CONDITIONS

It is necessary to provide the mitigation measures in order to reduce the air emissions during unfavorable meteorological conditions, in particular during winds, blowing towards Atash village (northern, north-western and western):

- Ground moistening;
- Stoppage of engines during the periods of forced equipment and vehicle outage or idle time;
- Control of work technique adherence;
- Closed transportation and unloading of construction material;
- Decentralization of construction equipment and facilities which are not involved into the permanent process flows;
- Maintenance repairs of diesel mechanisms;
- Regular control of exhausted gas toxicity.

## 6 ESTIMATION OF HAZARD CLASS FOR FACILITY

**Tab. A1.16. Estimation of hazard class**

Code	Pollutant	MPC <sub>a,d</sub> , mg/m <sup>3</sup>	MPC <sub>peak</sub> , mg/m <sup>3</sup>	SRLI	Hazard class	Emissions, t/year	a <sub>i</sub>	(Mi/MPCad i) <sup>ai</sup>
143	Manganese and its oxides	0.001	0.01		2	0.001380	1.3	1.520
301	Nitrogen dioxide	0.04	0.085		2	6.110040	1.3	690.525
304	Nitrogen oxides	0.06	0.4		3	0.106973	1	1.783
328	Soot	0.05	0.15		3	0.308756	1	6.175
330	Sulphur dioxide	0.05	0.5		3	0.760605	1	15.212
337	Carbon monoxide	3	5		4	3.979809	0.9	1.290
401	Hydrocarbons	1.5	5		4	0.000028	0.9	0.000055
616	Xylol	0.2	0.2		3	0.032000	1	0.160
703	Benzpyrene	0.00001			1	0.000008	1.7	0.741
1325	Formaldehyde	0.003	0.035		2	0.076613	1.3	67.505
2732	Kerosene			1,2	3	1.841008	1	1.534
2752	White spirit			1	3	0.048000	1	0.048
2902	Suspended solids	0.15	0.5		3	13.716864	1	91.446
2908	Inorganic dust (SiO <sub>2</sub> -20-70 %)	0.3	0.5		3	37.411694	1	124.706
5000	Welding aerosol	0.1	0.5		3	0.012000	1	0.120
<b>Total</b>						<b>64.404398</b>		<b>1001.2445</b>

The facility is referred to **hazard class III**, as HC > 10000