ENVIRONMENTAL HEALTH AND SAFETY REPORT

YEAR 2018

PETROCHEMIA BLACHOWNIA S.A.

CONTENTS

INTRODUCTION

Dear Sir and Madam

We are giving You the Environmental Statement, issue VIII, which provides information about our activities for the environment.

We follow the principles of sustainable development in our activities. Pursuit of maximizing occupational safety and minimizing influence on the natural environment is the principal criteria for any technical and technological decisions taken in Petrochemia - Blachownia S.A.
When we joined Responsible Care programme, we took further steps aimed at diminishing our influence on the natural environment and increasing ecological awareness and promoting pro-ecological attitudes in our environment. Registration in EMAS is a manifestation of the Company's aspiration to continuous improvement of environmental performance and building of sustainable development culture. It is also a way to conduct an open dialogue with interested parties in the scope of environmental performance.
All our employees care for the natural environment, they are aware of its importance to us all.

The Board of Petrochemia - Blachownia S.A.

Photographs: Edyta Hołyst, Marta Hennek, Teresa Samsonowicz
Grzegorz Sabura, Tomasz Ładak, Paweł Słysz, Krzysztof Szewczyk

We act according to special rules set, in the Policy of the Integrated Management System:

Petrochemia-Blachownia S.A.

INTEGRATED MANAGEMENT SYSTEM POLICY

The Integrated Management System includes Quality Management, Environmental Management, Occupational Health and Safety Management, Responsible Care Management System, EMAS and EU ETS

We safely produce the highest quality aromatic hydrocarbons

This is achieved by pursuit of the following objectives:

- Reliability of supplies of our products in terms of quantity, quality and timelines.
- Minimizing influence on the natural environment, prevention of environmental pollution.
- Minimizing employees' exposure to harmful effects of workplace conditions.
- Modernizing and enhancing equipment and technologies on the basis of the latest knowledge of technique and technology, with continuous improvement in energy output.
- Preventing emergencies, accidents, injuries, incidents, occupational diseases and potential accidents.
- Promoting health prophylactic among Company's employees.
- Continuous development of Integrated Management System.

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All employees know these objectives and implement them in everyday work, regardless of work position, objectives are set for different levels of management and are systematically assessed. The Company provides resources to achieve these goals and all the information, training and opportunities for employees to improve their qualifications.

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Achievement of these objectives is guaranteed by our management system compliant with: ISO 9001 standard in the scope of Quality Management, PN-ISO 14001 standard in the scope of Environmental Management, PN-N 18001 and OHSAS 18001 standards in the scope of Occupational Health and Safety Management, Responsible Care System, Regulation (EC) No 1221/2009 of the European Parliament and of the Council and Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions.

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In all its activities the Company and its employees observe provisions of law, abide by requirements of authorities and control bodies, they undertake to maintain compliance with all requirements that the Company has undertaken to meet

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Qualifications and awareness of the staff in terms of responsible performance of Integrated Management System Policy objectives are constantly developed.

Kędzierzyn- Koźle 02-01-2018 r.

PREZES ZARZĄDU
DYREKTOR GENERALNY
Jerzy Wiertelorz

ACTIVITY OF THE COMPANY

Petrochemia - Blachownia S.A. is manufacturer of carbo- and petrochemical products, used in chemical industry. The main area of Company's activity is production of aromatic hydrocarbons in crude benzol and petrochemical fractions processing. The main products are: benzene, toluene, solventnaphtha and hexane fraction. Performed in years 2000 – 2004 technological development enabled significant improvement of products quality, what resulted in possibility of using them in the new fields of use: in chemical syntheses. Realized in years 2006 – 2007 construction and start-up of extractive distillation unit enabled diversification of raw materials base, further improvement of benzene quality and production of toluene for chemical syntheses. Modernizations conducted in subsequent years allow to improve energy efficiency of the process and to improve the environmental impact as well.

TECHNOLOGICAL PROCESS

The entire technological process ***of coke benzene and petrochemical fractions processing*** comprises several individual operations, involving mechanical separation, vacuum distillation, atmospheric distillation, extractive distillation, distillation with water steam, acid refining neutralization and oxidation – reduction processes.

The process runs as follows:

Line 100 – light ends removal unit

Crude benzol of average composition is initially separated into a BT (benzene, toluene) fraction and heavy benzene. The BT fraction is directed to the distillation process to obtain light ends (containing, among others, CS_2, cyclopentadiene) and BT fraction. Low quality fraction rich in benzene and toluene but containing relatively large amount of impurities, specially sulphur compounds from external suppliers can be also processed along with crude benzol.

Line 300 – acid refining unit

In the next step BT fraction is directed to five-step refining by concentrated sulphuric acid in order to reduce content of sulphur bounded in thiophene, and also to remove unsaturated compounds and organic compounds of nitrogen and oxygen. By entering into chemical reactions with sulphuric acid (sulphonation) or being subjected under its influence to other changes (polymerisation), these compounds are separated along with the excess sulphuric acid in the form of post-refining mixture, which is directed to sulphuric acid recovery plant (line 900). Acid-refined BT fraction is neutralised with sodium hydroxide. After-process hydroxide is a waste product, which is directed to incineration in specialist plants for wastes disposal.

Line 400 – preparation of feed to extractive distillation and benzene production unit

Neutralised BT fraction is rectified in order to remove higher hydrocarbons as well as organic and inorganic fouling generated in acid refining and neutralisation process. So-refined BT fraction, contained saturated non-aromatics, is transferred to extractive distillation unit. In addition, line 400 gives possibility to produce benzene of 99,8% purity.

Line 500 - extractive distillation unit

After leaving line 400, BT fraction is mixed with petrochemical feedstock and subject to the process

of extractive distillation where a low-volatile solvent is put into the process in order to change relative volatilities of particular components of the mixture being distilled and thus improve conditions for their separation. The process results in obtaining non-aromatic hydrocarbons as a hexane fraction and BT fraction freed of non-aromatic hydrocarbons. The solvent put into the process circulates in a closed cycle.

Line 600 – final distillation unit

BT fraction is subject to the final distillation in order to obtain high-purity benzene (99,99+ %) and toluene (99,9+ %). The distillation residue are hydrocarbons C8+, which are turned back to the beginning of the process, to line 100.

Line 200 – heavy benzol processing unit

Heavy benzol obtained on line 100 is subject of vacuum distillation in order to obtain solventnaphtha and heavy preparation B.

Line 900 – sulphuric acid recovery plant

Raw materials for SAR Plant are by-products from crude benzol processing plant: post-refining mixture from acid refining process (line 300) and light ends form line 100. The process of sulphuric acid production comprises five stages:

- ✓ decomposition and burning of post-refining mixture (used sulphuric acid and organic compounds formed as a result of reacting with sulphuric acid) and combustion of light ends in excess of air and in high temperature (1300°C);
- ✓ cooling and dust removal from process gases;
- ✓ conversion of SO_2 to SO_3;
- ✓ condensation and cooling of sulphuric acid;
- ✓ utilisation of reaction heat for steam production.

Obtained concentrated sulphuric acid (97,5%) is mainly used in acid refining process (line 300), and its surplus is placed on the market. The main advantage of this plant and ecological effect: a significant reduction in emissions of sulphur dioxide, carbon monoxide, dust fraction PM10, and a small reduction in benzene emission. Another benefit of sulphuric acid recovery plant is an improvement in crude benzol processing economics through recovery of sulphuric acid from post-refining mixture produced in acid refining process and effective utilisation of light ends from crude benzol containing considerable amounts of sulphur compounds.

Line 1000 – water steam production plant

In March 2012 Petrochemia – Blachownia started-up the water steam production plant, which is the source of the steam for technological purpose. The plant consists of two natural gas boilers LOOS UNIVERSAL ZFR-X 28000 with the capacity of 25 tons of steam per hour for each boiler, together with the necessary infrastructure and water treatment unit.

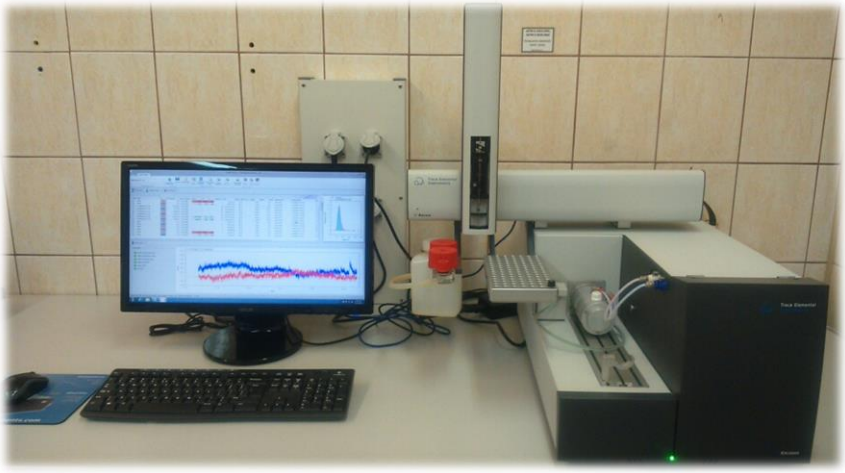
The quality of products at particular stages of the technological process is analysed on an ongoing basis by on-line analysers

aa well as ***company's laboratory.***

Significant improvement of products quality during last few years caused that impurities dropped to trace amounts. To maintain the ability to control the process and the quality of our products we have equipped our laboratory with the most modern, specialist analytical equipment for marking, among others, the contents of total sulphur and total nitrogen and high class gas chromatographs.

The laboratory, apart from performing analyses for Company's own needs, also provides services to external clients in the scope of chromatographic analyses and a range of specialist analyses (e.g. sulphur content, chlorine content).

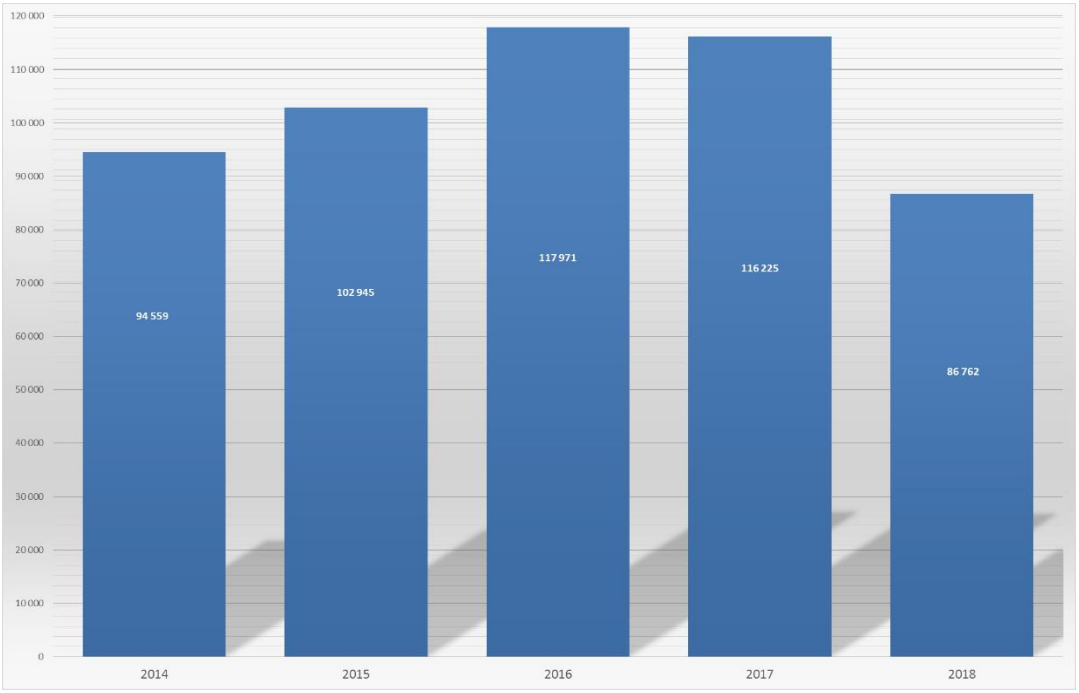
The company employs a skilled staff of specialists, highly involved in issues of quality and protection of the environment. The most noteworthy achievements include accomplishments in the area of protection of the natural environment achieved by using and commissioning modern methods of waste water treatment, absorbing and utilising off-gases and waste management.



RAW MATERIALS

Feedstock used in production mainly includes crude benzol of coke origin and petrochemical fractions containing benzene and its homologues.

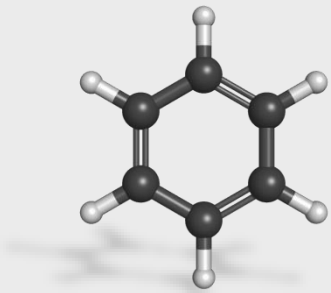
Processing of crude benzol and petrochemical fractions in years 2014 – 2018 [ton/year]



PRODUCTS

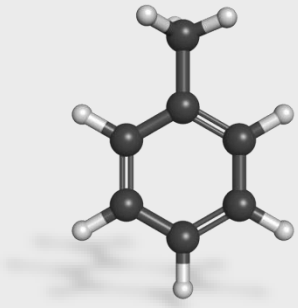
Benzene

Used in a series of other chemical synthesis (e.g. production of cumene, cyclohexane, aniline, LABS, maleine anhydride).



Toluene

Used as raw material for chemical synthesis (TDA, TDI) and as solvent in varnish and paint industry, and also as addition to the fuel components, increasing the octane number.



Hexane Fraction

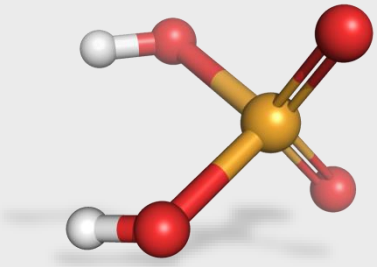
Used as a raw material to pyrolysis, isomerisation, reforming, for production of solvents.

Solventnaphtha

Used mainly as a solvent for bituminous products. It can also be used as feedstock for xylene production.

Sulphuric Acid

Used in many chemical syntheses (sulfonation, nitration), to the production of phosphoric acid, fertilizers, hydrochloric acid, insulation and abrasive materials, explosives, wood boards, for refining of fats and hydrocarbons, as dehydrating factor, as electrolyte in acidic batteries, in production of artificial silk, as pH regulator, in food industry, in surface treatment processes, purification, in electrolytic processes, scrubbing, in industrial cleaning, in waste water treatment processes, as laboratory reagent.



UTILITIES CONSUMPTION INDICATORS

The graph below presents the consumption indicators for some utilities as compared with the processed raw material for crude benzol and petrochemical fractions processing plant, sulphuric acid recovery plant and water steam production unit. From the year 2015 electricity consumption index includes nitrogen generator.
The graph shows also natural gas consumption indicator for one Gcal of water steam produced by steam generator.

In the year 2015, a significant reduction of utilities consumption indexes is observed. This is possible due to the high use of production capacity and stable operation of the plant. The use of frequency inverters for part of electrical equipment has also contributed to obtaining a better energy indicator.
Observed in 2015 significant reduction of water steam and natural gas consumption was achieved through building additional measurements of steam consumption in the most energy-consuming areas of technological process and visualization of the measurement in process control system. It enables immediate response to the increased steam consumption. Systematic monitoring of the temperature of cooling water and return water and on this basis regulation of the flow of water to the largest of its receivers resulted in the reduction of the 2015 rate of water consumption. For cooling water and electric power the trend of reducing consumption indicators continues in the years 2016 and 2017. The increase of electricity consumption in 2018 is related to the lower unit processing of raw materials and simultaneous operation of auxiliary installations (air compressor, nitrogen generator). Stable level of steam consumption between 2015 and 2017 results from the inclusion to steam balance the amount of steam consumed for degassing of boiler feed water. It resulted in the improvement of the natural gas consumption ratio at the expense of the steam consumption index for the crude benzol processing plant.

ENVIRONMENT

PROECOLOGICAL ACTIVITY – ENVIRONMENTAL POLICY

Petrochemia-Blachownia SA is a company for which care for the natural environment and safety at work is one of the core tasks. Attention to maximize safety and minimize the impact on the environment is an integral part of the management philosophy. From the beginning of our activity (June 1998) we constantly correct technological and technical solutions, which are significantly influenced and still influence on reduction of emissions to the environment. The numerous upgrades and technological changes are carried out on all production plants, among others, leading to reduce the environmental nuisance.

They consist primarily of:

- ✓ Continuous care for harmetization of equipment and technological devices, products and raw materials loading and unloading points, storage tanks.
- ✓ Successive hermetization of sampling points as well as storage tanks and intermediate vessels dewatering systems.
- ✓ Maintaining a high standard of ground protection through a systematic overhauls of protective trays of equipment and technological devices as well as loading and unloading points, construction of trays under new devices.
- ✓ Modernizations of air protection system together with construction of flare for combustion of off-gases from crude benzol plant.
- ✓ Working out and implementation of technology to reduce hydrocarbons charge and COD parameter in waste water directed to the treatment plant.
- ✓ Isolation from waste water streams which are responsible for high level of COD parameter as dangerous wastes directed to incineration.

In the year 2013, in Resolution No. U/355/2013 the Management Board adopted a long-term environmental policy, which establishes specific goals and objectives in the area of optimization of utilities supply, improvement of environmental impact in the scope of wastewater management and land protection, improvement of environmental influence of emission to the atmospheric air with particular emphasis on reduction of benzene emission, while maintaining the principles of sustainable development, while maintaining the principles of sustainable development

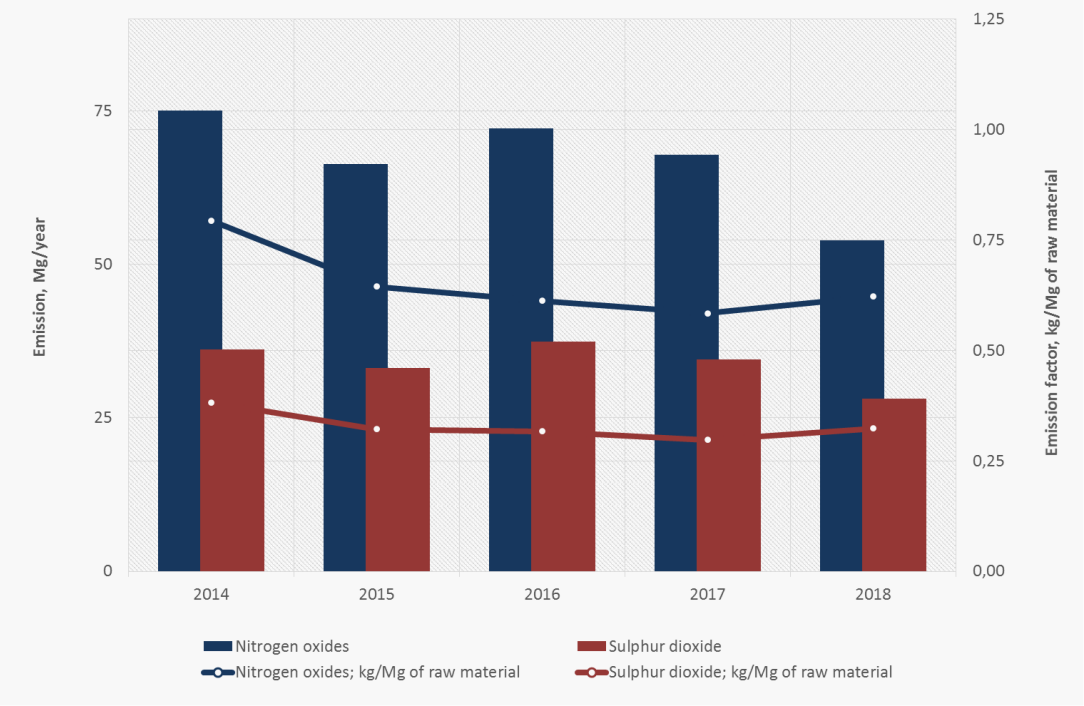
Technological processes are conducted in a manner which ensures that they meet applicable environmental standards.
All of Company's employees care about the environment, are aware of the importance of the environment in human life.
Control of environmental impact is carried out in the framework of Integrated Management System, component of which is Environmental Management System in accordance with ISO 14001. By joining the Responsible Care Program Petrochemia-Blachownia S.A. has taken additional activities aimed at reducing its impact on the environment and to increase knowledge about the ecology and development of pro-ecological attitudes in their environment.
In line with a` policy and strategy of the company our objective is to achieve satisfaction of our customers, expand our product offering, seek new markets. While carrying out the orders of our customers, i.e. when conducting technological processes we always strive to protect the natural environment and care for protection of our employees, as well as persons working on premises of our company. Owing to enhancement processes in place in our company, improved work organization and experience we gain when we improve our work, technology and products we are capable of meeting market requirements and ever-increasing needs of our customers.

ENVIRONMENTAL INFLUENCE

Reduction of emission of gaseous and dust pollutants to atmospheric air is possible thanks to application of the latest technologies during construction of the new unit for burning off-gases from technological systems (2006) and construction of extractive distillation unit (2007) and Sulphuric Acid Recovery Plant (2010); Water Steam Production Plant (2012).
Of course, not only new installations conform to the highest criteria of environment protection. One of our goals is to minimize our influence on the natural environment, accordingly, to meet your and our needs we constantly modernise and improve our technological systems.

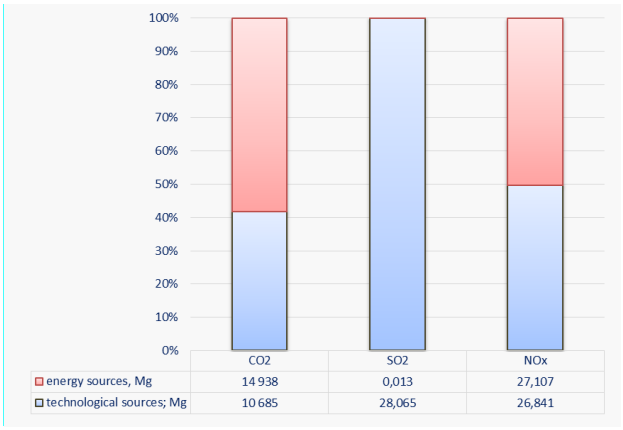
AIR PROTECTION

Emissions of gaseous and dust pollutants to the atmosphere are calculated based on emission indexes individually for each emission source. The graph below presents the total emissions of individual pollutants, including fugitive emissions.

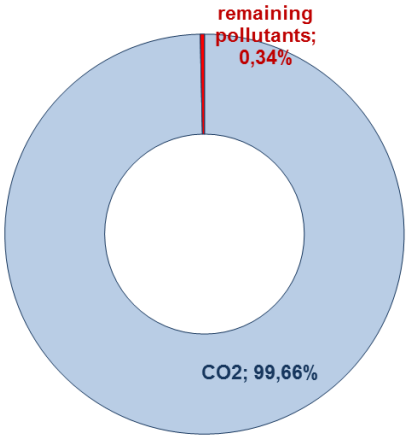


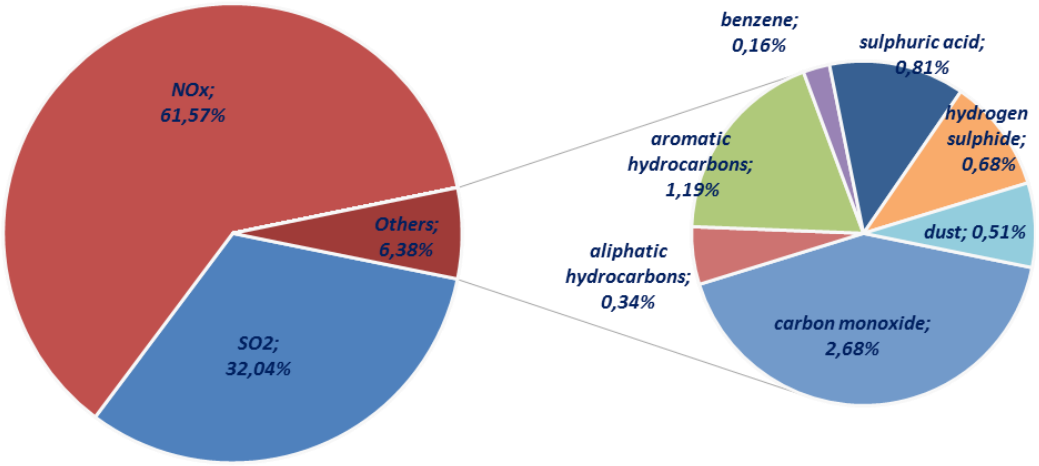
Low emission of sulphur dioxide was achieve thanks to using of light ends as a raw material to SAR Plant and owing the sulphuric acid recovery technology delivered by Haldor Topsøe A/S which allows reduction of sulphuric acid mist and emission of sulphur dioxide achieved by precise control of process temperatures. Thanks to improvement of natural gas consumption index for 1 ton of produces steam, in the year 2015 decreasing of nitrogen oxides and sulphur dioxide emission is observed. This trend was not maintained in 2016 due to the much higher processing of raw materials and higher production of water steam. In 2017, the trend of lowering emission of these pollutants is again noted. The increase in emission indexes for these pollutants in the year 2018 is related to a larger (by 15.95%) than in 2017 sulfuric acid production in relation to the quantities of raw materials processed.

Emission of selected pollutants to atmospheric air in relation to the sources of their formation



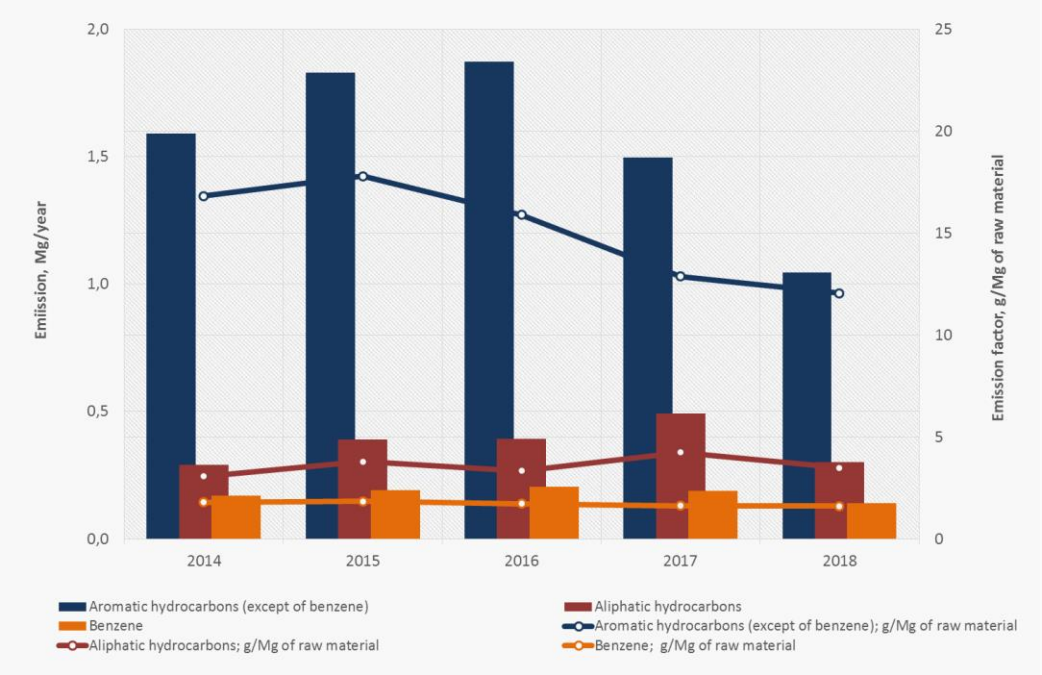
Percentage of particular kinds of emission in total emissions to atmospheric air from the area of the Company





CRUDE BENZOL AND PETROCHEMICAL FRACTIONS PROCESSING AND SULPHURIC ACID RECOVERY PLANT – IPPC PLANT

Emissions of hydrocarbons are specific for ***crude benzol and petrochemical fractions processing plant***. Sulphuric acid recovery plant doesn't generate such kind of pollutants. The emissions given in the graph include both organized and fugitive sources.



Admissible values of pollutants emission to the air covered by IPPC permission

Parameter	According to the decision no. DOŚ.MJ.7636-13/10 of 19.11.2010 with its last amendment DOŚ-III.7222.24.2017.HM of 15.05.2017 [Mg/year]	Percentage utilization of permissible emissions in the year 2018
Nitrogen oxides; NOx	64,000	41,9%
Sulphur dioxide, SO_2	66,494	41,9%
Aliphatic hydrocarbons	2,533	11,9%
Aromatic hydrocarbons	2,817	11,7%
Benzene	0,074	11,6%

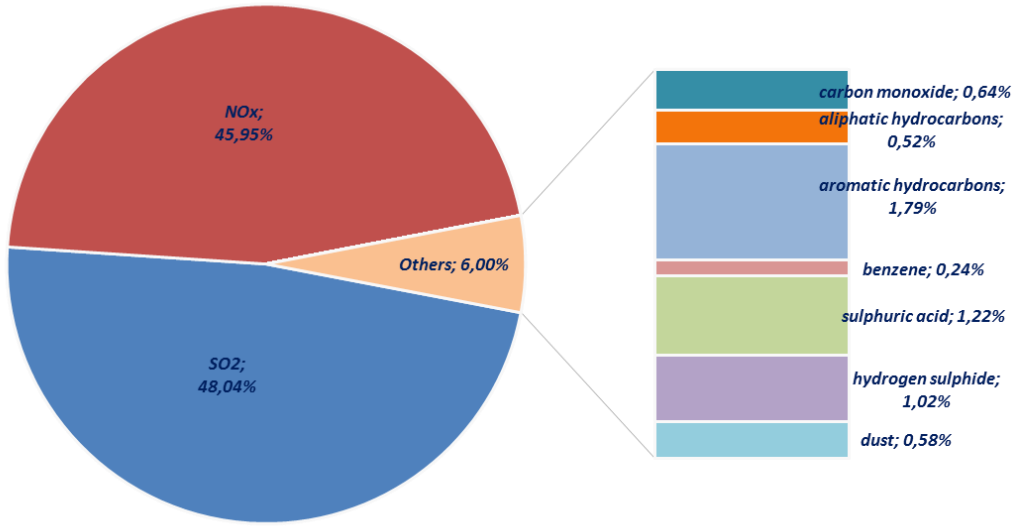
Air emissions and emission factors for ***sulfuric acid recovery plant*** are in line with BAT requirements.

Parameter	Emission [kg/h]			Emission factors; kg/Mg 1 tonne of sulphuric acid	
	According to measurement of 19.10.2017	According to measurement of 19.10.2018	Admissible emission according to BAT and covered by the Decision for the IPPC installation issues by the Marshal of the Voivodeship	According to BAT	According to last measurement
Sulphur dioxide, SO_2	0,3214	0,4022	8,3	5,53	0,268
Sulphur dioxide mist, H_2SO_4	0,0946	0,0979	0,21	0,14	0,06

Fugitive emissions of selected pollutants into air from IPPC installation (crude benzol and petrochemical fractions processing plant and sulphuric acid recovery plant) in the year 2018.

	Permissible emission according to the decision no. DOŚ.MJ.7636-13/10 of 19.11.2010 with its last amendment DOŚ-III7222.24.2017.HM of 15.05.2017 (does not include fugitive emission) [Mg/year]	Calculated emission; [Mg] (calculated based on emission indexes individually for each emission source		
		total	from regular sources	fugitive
Benzene	0,074	0,140	0,009	0,131
Aliphatic hydrocarbons	2,533	0,302	0,301	0,001
Aromatic hydrocarbons	2,817	1,046	0,328	0,718
Hydrogen sulphide	-	0,597	-	0,597
Sulphuric acid	1,680	0,714	0,704	0,010
Nitrogen oxides	64,000	26,841	26,832	0,009
Sulphur dioxide	66,494	28,065	27,838	0,227
Dust	0,800	0,337	0,335	0,002

Percentage of particular pollutants in total emissions to atmospheric air from IPPC plant



ENERGY SOURCES

Permissible values of emission of pollutants from ***steam boiler*** covered by permission for gases and dust emission into air:

Parameter	According to the Decision no. DOŚ.III.7221.9.2011.BG of 12.08.2011; DOŚ.III.7221.5.2013.MWi of 14.03.2013 [Mg/year]	Percentage utilization of permissible emissions in the year 2017
Nitrogen oxides; NOx	52,214	51,92%
Sulphur dioxide, SO_2	12,180	0,11%
Dust	1,747	7,64%

Requirements of emission standards for combustion installations, in accordance with Annex 3 to the Regulation of the Minister of Environment of 4 November 2014 on the emission standards specified in [mg/m^3_u] at 3% oxygen content in the exhaust gases:

Parameter	According to the Decision no DOŚ.III.7221.9.2011.BG of 12.08.2011; DOŚ.III.7221.5.2013.MWi of 14.03.2013 [mg/m^3_u]	Boiler no 1		Boiler no 2	
		According to measurement of 22.05.2018 [mg/m^3_u]	Emission according to the last measurement of 15.12.2018 [mg/m^3_u]	According to measurement of 22.05.2018 [mg/m^3_u]	Emission according to the last measurement of 15.12.2018 [mg/m^3_u]
Nitrogen oxides; NOx	150	86,19	62,52	89,54	90,2
Sulphur dioxide, SO_2	35	<22,29	<15	<21,84	<15
Dust	5	2,6	<1,77	2,6	<1,77

** b.l. - below the limit of the methods*

Permissible values of emission of pollutants from laboratory boiler covered by the permission for gases and dust into the air:

Parameter	According to the Decision no. DOŚ.III.7221.9.2011.BG of 12.08.2011; DOŚ.III.7221.5.2013.MWi of 14.03.2013 [Mg/year]	Percentage utilization of permissible emissions in the year 2018
Nitrogen oxides; NOx	0,172	0,13%
Sulphur dioxide, SO_2	0,007	0,15%
Dust	0,028	0,13%

Laboratory boiler is not a subject of measurement.

The amount of emission is calculated based on LPG consumption using emission factors derived from Compilation of Air Pollutant Emission Factors – AP-42 EPA, USA 1972r.

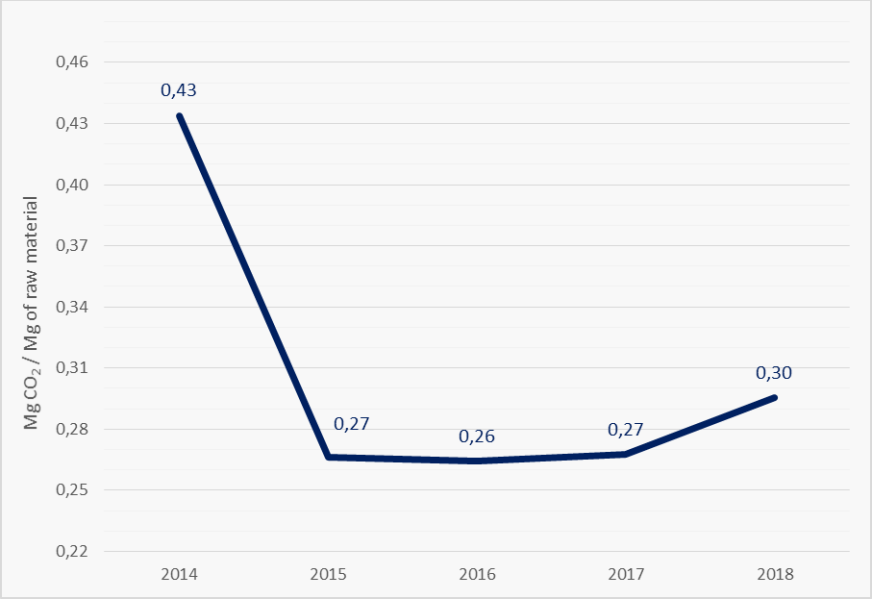
GREENHOUSE GASES

In accordance with the requirements of greenhouse gases trading scheme, the Company monitors the volume of carbon dioxide emissions in accordance with the methodology described in monitoring plan approved by the Marshal of the Opole Province.
Emission of carbon dioxide from individual installations covered by the trading scheme is as follows:

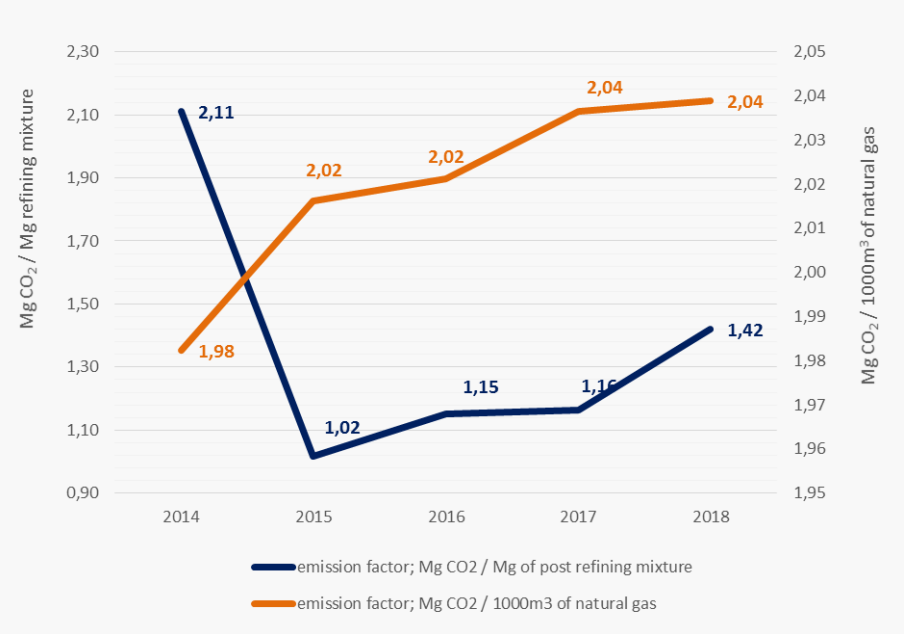
	Carbon dioxide, CO_2; Mg	
	Steam generator*	**Aromatics production and sulphuric acid recovery plant**
2013	18 786	27 663
2014	21 682	20 632
2015	18 800	9 298
2016	19 913	11 769
2017	19 473	11 615
2018	14 938	10 685

** from 2013 together with laboratory boiler*

Significant decrease of carbon dioxide emission form steam generator could be obtain thanks to improvement of natural gas consumption index for 1 ton of produced steam and primarily thanks to improvement of water steam consumption index by crude benzol and petrochemical fractions processing plant. In case of aromatics production and sulphuric acid recovery plant it is connected with change of methodology of monitoring of emission form post-refining mixture stream: replacing the calculation data (calorific value and emission factor) from national Centre of Emission Management tables to mass emission factor, expressed in Mg CO2 / Mg of fuel, calculated on the basis of the determined analytically carbon content of the fuel stream. This means the use of a higher tier (level of accuracy) of determination of calculation factors, and thus a more accurate determination of emissions. The increase in 2016 carbon dioxide emissions from aromatic hydrocarbons production and sulphuric acid recovery plant is connected with higher than in 2015 processing of raw materials in sulphuric acid recovery plant and a change in the quality of the raw material for acid refining unit, which results in increase of carbon content in post refining mixture, and thus the emission factor. In the years 2016 and 2018, carbon dioxide emission remains at the similar level.
The chart below illustrates carbon dioxide emissions factor per 1 tonne of raw material processing (crude benzol and petrochemical fractions):



The increase of the total CO2 emission index in 2018 by 10% as compared to 2017 results from the increase in the emission of this pollutant from the combustion of the post-refining mixture and light ends streams, which was mainly due to the higher light ends consumption by 12%.



Emission of carbon dioxide from post-refining mixture and light ends streams make over 90% of total CO2 emission form technological plant.

	CO2 emission from post-refining mixture and light ends; Mg	*Total CO2 emission from technological plant; Mg*	*%*
2014	19 393	20 632	94%
2015	8 666	9 288	93%
2016	11 300	11 789	96%
2017	11 169	11 615	96%
2018	10 322	10 685	97%

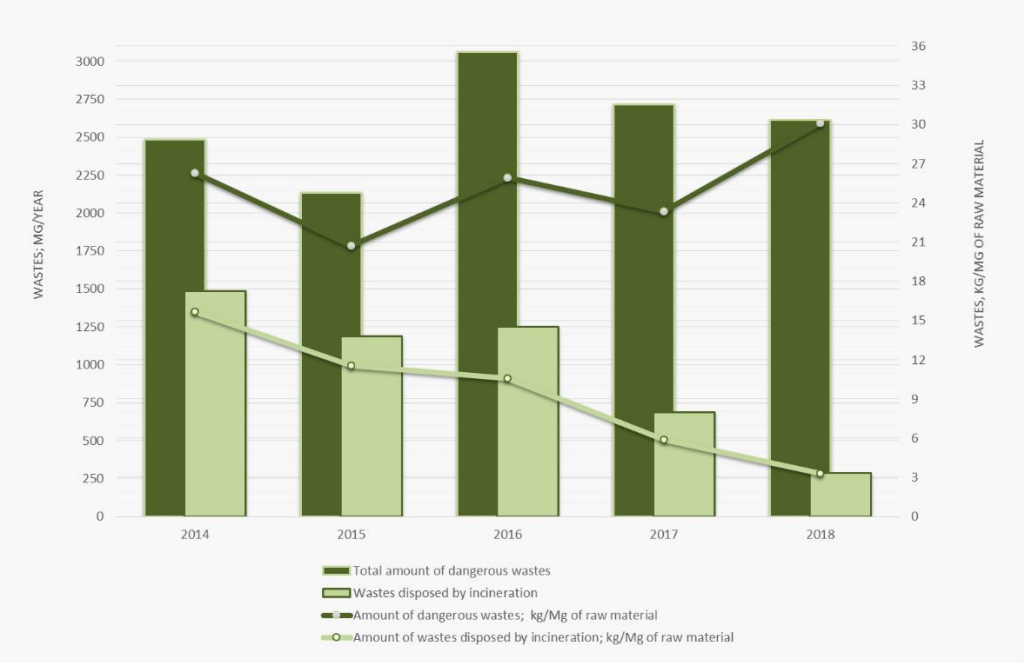
WASTES MANAGEMENT

The processes carried out on plants exploited by Petrochemia -Blachownia SA generate three types of dangerous technological wastes:

- ✓ 16 03 03* inorganic wastes containing dangerous substances;
- ✓ 10 01 18* wastes from gas cleaning containing dangerous substances,
- ✓ 05 06 03* other tars,
- ✓ 16 07 09* wastes containing others dangerous substances

In this group there are also wastes generate as a result of emergencies (17 05 03* soil and stones containing dangerous substances).

Besides the aforementioned "technological wastes" Petrochemia - Blachownia also produces other types of hazardous and non-hazardous wastes, which arise in operations of technical equipment maintenance and repairs, during overhauls, in other operations related to equipment maintenance, as a result of carrying out of laboratory analyses, and as a result of other activities (e.g. office works).



In 2014 the structure of generated waste changed. Due to the large intensity of repairs and demolition works there is larger share of wastes from cleaning of tanks and process equipment (050603*). Whereas the amount of “technological wastes”, generated in the process of neutralization of BT fraction after refining (160303*) significantly decreased. This may be a result of acid refining unit modernization (replacement of refining columns on V stage of acid refining by the new reactor), what gave a significant improvement of the process effectiveness (separation of sulphur contaminants from BT fraction) and decreasing the amount of sodium hydroxide consumed in the process of neutralization. The greater amount of wastes from gas cleaning (100118*) is explained by carrying out the trials of using aluminium sulphate in sulphuric acid recovery plant in order to bind sodium contained in post refining mixture, what causes generation of more dust.

Lower (in comparison to the year 2014) amount of wastes generated in the year 2015 is related to disposal in 2014 of wastes produced during the breakdown of the post-refining mixture storage tank.

Increase of the amount of waste generated in 2016 is explained by the higher average plant capacity, as well as higher total crude benzol processing by more than 1%.

Reducing the amount of waste generated in 2017 is primarily a result of the investment project of recovering hydrocarbons from spent sodium hydroxide (waste 160303 *), which was completed in 2016.

The increase of wastes index per ton of raw material is related to the increase in the amount of generated waste with code 160303*. This is due to the change in the structure of benzol supply and a higher share of benzol from domestic coke plants, containing higher amounts of cyclopentadiene, which results in a greater amount of impurities in the acid refining process requiring removal by washing with sodium hydroxide.
Amount of technological wastes.

Type of wastes	Mass of waste in the year 2014 [Mg/rok]	Mass of waste in the year 2015 [Mg/rok]	Mass of waste in year 2016 [Mg]	Mass of wastes in year 2017 [Mg]	Mass of waste in the year2018 [Mg]	Mass of waste covered by IPPC permission [Mg/rok]
Other tars 05 06 03*	493,10	251,86	-	-	-	800
Inorganic wastes containing dangerous substances 16 03 03*	1982	1873	2120	2161,50	2196,52	2500
Wastes from gas cleaning containing dangerous substances 10 01 18*	10,18	10,92	7,80	12,08	4,98	15
Soil and Stones containing dangerous substances 17 05 03 *	-	-	-	1,40	-	600
wastes containing others dangerous substances 160709*	-	-	242,92	407,54	410,12	1000

The exploitation of steam production plant in the year 2013 350kg of plastic packaging (15 01 02) were produced, in the year 2014 320kg, in the year 2015 280kg, in the year 2016 128kg, in the year 2017 – 92kg and in the year 2018 – 80kg.

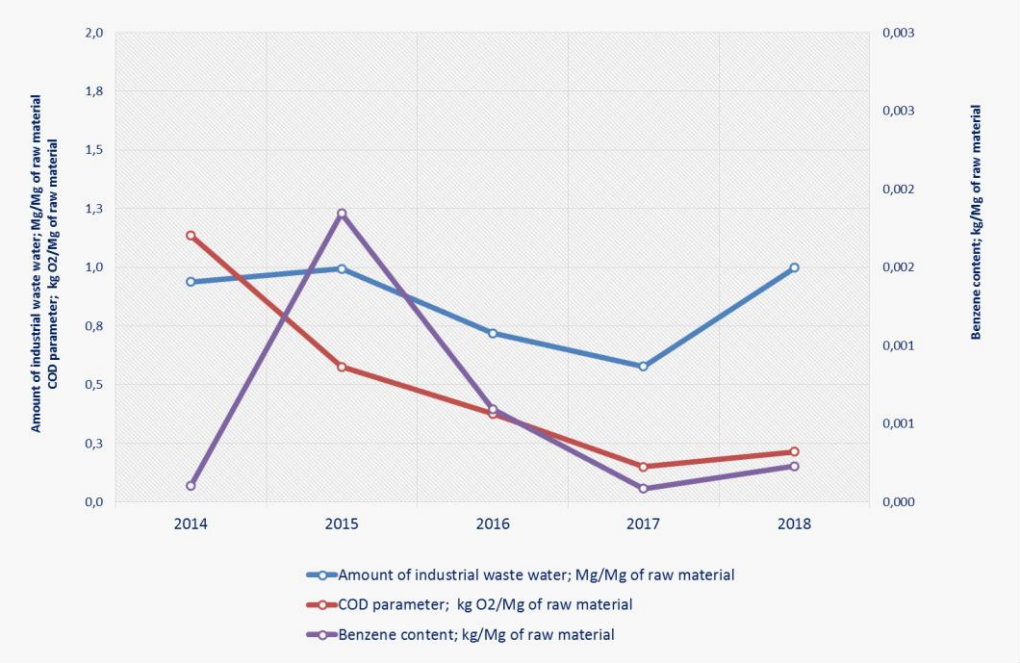
WATER AND WASTE WATER MANAGEMENT

Quality of waste water transported to the Industrial Waste Water Treatment Plant belonging to PCC Energetyka Blachownia sp. z o.o.

Parameter	*Content limits in waste water covered by the „old" decision*	*Waste water parameters according to the new decision*	*Analysed content in waste water*	
			instalacja benzolu – studzienka 3C (średnia z trzech analiz)	pole 51 – tank 5109 (średnia z dwóch analiz)
Total nitrogen; mgN/dm^3	200	-	19,767	4,920
Ammonium nitrogen; mgN_{NH4}/dm^3	200	*200*	5,223	0,795
Bounded cyanides; mgCN/dm^3	10	*10*	0,503	<0,015
Free cyanides; mgCN/dm^3	-	*5*	0,443	<0,015
Phenol index; mg/dm^3	25	*25*	2,571	1,226
Benzene; mg/dm^3	10	-	0,230	0,160
Total BTEX; mg/dm^3	100	-	0,909	1,226
AOX; mgCl/dm^3	1	-	0,367	0,067
Chlorides; mgCl/dm^3	1000	-	392	37
COD_{Cr}; mgO_2/dm^3	2000	-	215	285
pH	6,0 – 9,0	*6,5 – 9,5*	8,0	7,7
temperature, °C	-	*max. 35*	25*	21*

* one analysis

**) Total BTEX – total content of hydrocarbons: benzene, toluene, ethylbenzene, xylenes.*
***) AOX – Absorbable Organic Halides.*
****) COD – chemical oxygen demand – equivalent amount of oxygen taking up from oxidant (mg O_2/dm^3) necessary for oxidation of organic and some inorganic compounds to simple compounds (e.g. CO_2).*



Development and increasing of our plants production abilities forcing us to consequent activities for environment protection and that is why, in spite of increasing of production abilities, the continuous trend of waste water quality improvement is noted.

In the year 2014 the amount of industrial waste water produced significantly decrease: of 37% in comparison to the year 2013. This is mainly the result of smaller amount of waste water from demineralized water production (better recovery of steam condensate).

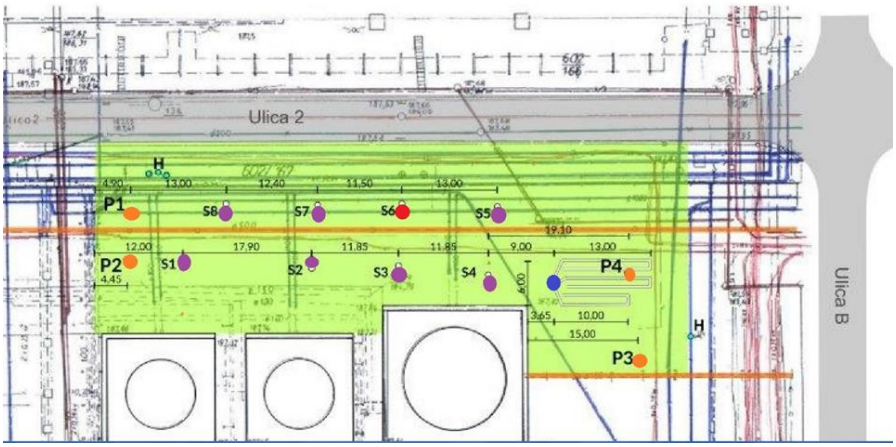
Benzene content in waste water released into the sewage system depends on the technological regime maintained in the distillation unit.

The increase in the amount of waste water in 2018 results from the necessity of intensive cleaning (washing with water under pressure) of light ends pipelines. The necessity is directly related to the change in the structure of benzene supply and a greater share of benzene from domestic coking plants, containing higher amounts of cyclopentadiene, which is deposited in light ends pipelines.

GROUND AND GROUND WATER MANAGEMENT

For the past couple of years, the company has been monitoring status of contamination of soil and groundwater. Results of these actions show presence of different pollutants in deeper ground layers what means that these are „historical" pollutants resulting from previous events and activities. The analysis of the obtained results allows to make a conclusion that the condition of ground - water environment does not going worse.

Along with the initial report of the state of ground and ground water the method for monitoring soil and groundwater was accepted: a combination of systematic assessment of the risk of contamination and analyses. The assessment will be conducted on the basis on results of the plant and its particular element tightness inspections with a frequency of once a year. The analyses of ground contamination will be carried out in points and in the scope specified in last change of IPPC permission dated 16.02.2016 with a frequency of once every 10 years, while the groundwater with a frequency of once every 5 years. The Company performs an assessment of the risk of contamination of ground and groundwater; which identifies the areas particularly sensitive to the risk of contamination (underground waste water system). These areas are the subject to special supervision. In March 2015 the company submitted to the Regional Director of Environmental Protection in Opole report on historical land contamination. The document shows that the contamination have been risen prior to the acquisition of the land covered by the application, which means that the obligation to carry out remediation is not on the Company. The areas covered by the application constitute 99% of the area currently occupied by the Company. The risk of imposing the obligation to carry out remediation exists in case of land not covered by the notification of historical pollution (1% of the area occupied by the Company) and in the case of environmental damage. Because of that in the cooperation with the Department of Microbiology of the University of Silesia the company develops method for remediation of contaminated ground. At the moment of preparation of this Statement field trials for the assessment of the effectiveness of developed biopreparate are carried out. Trial are scheduled for two years.



Legend:

- cleaning wells
- well - bioreactor
- drainage well
- sampling points for soil control samples

Due to the fact that the Company is located in an industrial complex Blachownia, surrounded by other, independent entities, there is the necessity for development a comprehensive solution to solve the problem for entire industrial area.

In the year 2016 the assessment of the risk of ground contamination on human health and on the environment was performed. It showed that contamination depositing in deeper layers of the ground does not pose a real risk. In April 2017 analyses of soil surface (to a depth of 25cm below the surface) was made. On the basis of its results, the risk assessment for these contamination was performed. It showed that they would not have toxic effects on human health or ecological risks; groundwater contamination taken from piezometers does not originate from the land surface, and deeper soil layers.

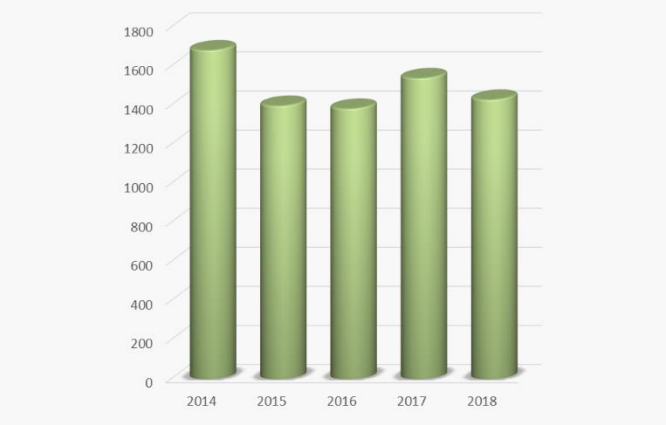
HEALTH AND SAFETY

ACTIONS INCREASING THE LEVEL OF WORK SAFETY

Petrochemia - Blachownia SA comprehensively approaches to safety and protection of health and life of their own employees and the employees of external companies carrying out works in the Company. This is due to the specific of the technology and potential hazards for work, process and fire safety. The special care to ensuring high standards of safety is manifested in:

- Continuous improvement of work conditions of workers by minimizing their exposure to harmful and annoying work-related factors.
- Permanent improvement of employees comfort by maintaining a proper, good technical condition of buildings, work and sanitary premises.
- Systematic inspections and maintaining in good condition of operating platforms, ladders, stairs, protective railings and grids.
- Modernizations and maintaining in good condition fire protective systems, extinguishers and alarm systems.
- Introduction of new, advanced technologies and continuous improvement of existing, keeping pace in the range of work safety, with the highest European standards.
- Continuous training process of own employees and the employees of external companies, in order to consolidate technological knowledge, knowledge of safety and raise awareness of the impact of their work and behaviour for safety of their own and theirs colleagues.
  All employees of the Company are subjected to health and safety training required by law, that in its scope include the provisions and principles of health and safety and fire protection in force throughout the Company and specific to the job.

The results of the examinations at the end of training and the current observation of work and behaviour of employees show that training is effective and efficient, and acquired knowledge is used by employees in their daily work.



- Maintaining a group of emergency workers, whose task is to assist in emergency situations and counteract the effects of failure. Team members are regularly subjected to theoretical and practical training.
- Systemic approach to solving the problems related to safety at work, in which special emphasis is placed on eliminating hazards through process hermetization, using of group protection equipment.
- Analysis of emergencies, failures, accidents, near misses.
- Identification and analysis of occupational risks for each work post; analysis and assessment of process risk.

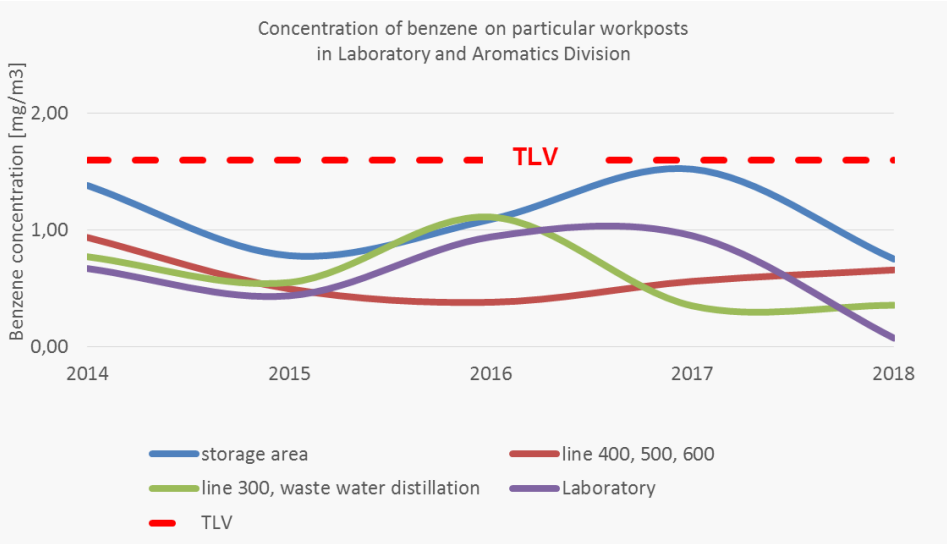
- Using of group protection equipment and wearing of employees with protective clothing and personal protective equipment in a high standard of protection.
- Carrying out regular supervision over the work of subcontractors.
- All employees of subcontractors taking work in PBSA for the first time were subjected to training in the scope of health and safety, during which they were familiarized with the specific hazards in the workplace, work permission system and results of the risk assessment. Additional training of staff employed during the summer maintenance shutdown and in non-standard works are carried out as well.
- Conditions of work safety are specified in the Health and Safety Plans developed by subcontractors.
- Promotion of health protection programs.
- Equipping of Company's facilities with the highest quality rescue equipment, such as defibrillators.

Actions to improve of work safety are consulted with workers representatives.
For few years, the Company leads the competition “Work safely" in which employees submit their ideas for improving safety. The best are the basis for safety expansion plan.

During the last three years expenditures for safety expansion was over 6 mln PLN.

RESULTS OF MEASUREMENTS OF HARMFUL FACTORS AT WORK POSTS

Thanks to systematic realisation of the Program of Integrated Management System and General Outline of Responsible Care Management System, we have sustain concentrations of harmful factors (such as benzene and toluene) on the constantly low level and its concentrations have been below limit value.



TLV – (threshold limit value) – of chemical substance defines the reasonable level to which a worker can be expose without adverse health effects.
TLV-TWA – (time weighted average) – average exposure on the basis of a 8h/day, 40h/week work schedule.
In June 2003 TLV for benzene was changed from 10 to 1,6 mg/m^3).

WORK ACCIDENTS AND OCCUPATIONAL DISEASES

A positive effect of actions taken is also a small number of accidents at work and reduced amount of hazardous and emergency situations.

Year	Number of accidents	Number of occupational diseases
2013	2	-
2014	1	-
2015	2	-
2016	0	-
2017	1	-
2018	1	-

MANAGEMENT CERTIFICATES

INTEGRATED MANAGEMENT SYSTEM

BUREAU VERITAS Certification

Certificate
Awarded to

PETROCHEMIA-BLACHOWNIA S.A.
ul. Szkolna 15, 47-225 KĘDZIERZYN-KOŹLE
POLAND

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

STANDARD

ISO 9001:2008
ISO 14001:2004

SCOPE OF SUPPLY

PRODUCTION AND SALE:
BENZENE, TOLUENE, SOLVENTNAPHTA, HEXANE FRACTION,
HEAVY PREPARATIONS, SULPHURIC ACID.

Certification Cycle Start Date: **28 June 2016**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **14 September 2018**

To check this certificate validity please call: +48 22 549 04 00
Further clarification regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

Issue Date: 18 July 2016

Certificate Number: **PL006101/P**

Piotr Popławski
Local Technical Manager

PCA
AC 081
QMS, EMS

Petrochemia – Blachownia S.A. has the Integrated Management System, consisting of:

- Quality Management System according to standard ISO 9001
- Environmental Management System according to standard ISO 14001
- Occupational Health and Safety Management System according to standard PN-N 18001 and according to standard OHSAS 18001

BUREAU VERITAS Certification

Certificate
Awarded to

PETROCHEMIA-BLACHOWNIA S.A.
ul. Szkolna 15, 47-225 KĘDZIERZYN-KOŹLE
POLAND

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

STANDARD

PN-N 18001:2004
OHSAS 18001:2007

SCOPE OF SUPPLY

PRODUCTION AND SALE:
BENZENE, TOLUENE, SOLVENTNAPHTA, HEXANE FRACTION,
HEAVY PREPARATIONS, SULPHURIC ACID.

Certification Cycle Start Date: **28 June 2016**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **27 June 2019**

To check this certificate validity please call: +48 22 549 04 00
Further clarification regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

Issue Date: 18 July 2016

Certificate Number: **PL006103/P**

Piotr Popławski
Local Technical Manager

PCA
AC 081
BHP, OHSAS

EMAS – ECO-MANAGEMENT AND AUDIT SCHEME

EMAS – Eco-Management and Audit Scheme is an EU environmental certification system which is functioning based on Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).
EMAS is addressed to all types of organizations interested in the implementation of comprehensive solutions in the area of environmental protection, both representatives of companies and non-commercial institutions.
This is a useful tool for creating a culture of sustainable development in organizations and effective management of available resources and energy. The EMAS requirements provide specific guidelines thanks to which organizations order environmental protection obligations, optimize costs incurred and effectively manage energy and resources. EMAS is also a reliable system for reporting the organization's environmental impacts, which facilitates an open dialogue with interested parties.
Registration in the EMAS means that the organization meets the most stringent environmental protection requirements. It is the prestige of being among the companies that conduct their business in accordance with the idea of sustainable development. Prestige confirmed by a certificate granted by the General Director for Environmental Protection.

The Company is registered in EMAS from the year 2011.

EMAS
Verified environmental management
PL 2.16-002-27

RESPONSIBLE CARE

Petrochemia – Blachownia S.A. is a Company, which puts the European eco-trends and environmental programs on the first place. Therefore, the Company joined the pro-environmental program **„Responsible Care"** and its committed to take actions for continuous decrease of its nuisance for natural environment, improvement of employees protection and safety and also local community. In June 2009 Company received Certificate of Responsible Care Management System.

In the year 2018 in the framework of the Programme of Action of the Declaration "Responsible Care", our Company has completed the following tasks:

I. Environment protection activities:
- Change in crude benzol plant off-gases configuration - simplifying the system, improving operational reliability.
- Purchase new hermetic pumps for hydrocarbons streams and assembly in place of existing pumps with mechanical seal.
- Purchase three breathing valves and assembly in place of existing valves on benzene storage tanks.

II. Improvement of process and work safety:
- Modernization of firefighting system – step II - replacement of connections of a foam system for storage tanks.
- Purchase and assembly of the new vessel 047 – assembly of vessel with "boot" and coalescer.
- Assembly of the new reboiler of the column K-410 – new reboiler with corrosion resistant pipes.
- Purchase and assembly of a new reactor in acid-refining unit.
- Purchase and assembly of safety showers (2 pieces).
- Purchase and assembly of hermetic sampling points (2 pieces).
- Purchase and assembly of a new boiler water pump in sulphuric acid recovery plant.

III. Health and health prevention:
- Group Medical Insurance.

IV. Internal and external communication regarding "Responsibility & Care" programme":
- Working out and spreading of „Environmental, Health and Safety Report"
- Organization of yearly practical training for students of chemical profile of Technical School No 3.

Odpowiedzialność i Troska®

SOCIAL ACCOUNTABILITY

Complement to Integrated management System and General Outline of Responsible Care Management System, was gaining by Petrochemia – Blachownia in the year 2008 certificate of conformity with Social Accountability standard SA8000. The The main aim of implementation of this system was to ensure that building up mutual trust between the owner, employees, clients, business partners, local society and our Company is the priority task for us. Company has relinquished its certification to SA8000: 2014; However, the system will continue to be maintained.

Standard for Petrochemia – Blachownia is the vision, which bases on good works of all employees with preserving of culture inside the Company. We have friendly, cultural and harmonious work atmosphere in the Company. The values according to which we behave are:

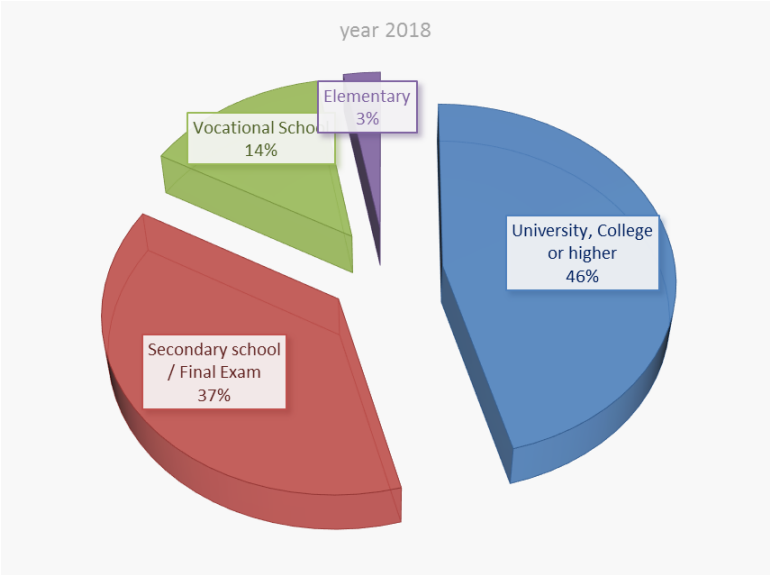
- Rules of effective and good management – the proof of it is quality success on the products market in spite of strong competitiveness. We achieve it thanks to commitment, high culture and knowledge of our employees.
- Rules of fairness and responsibility - the proof of it is employees' identification with the Company, taking care of its image by reliable, diligent and fair work with preserving of partnership with other people.
- The essential think for Company's activity and image is to provide safety work conditions by using common and personal protection means and high awareness of employees.

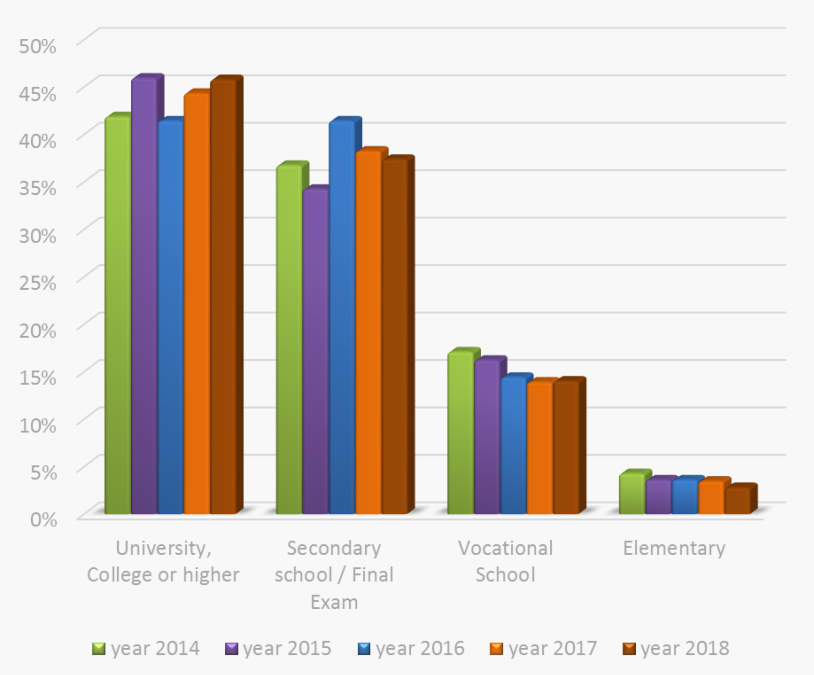
All these elements harmonize with Social Accountability Policy and Company's development strategy. All elements are realized with preserving of high standards of ethics.

EMPLOYEES OF PETROCHEMIA – BLACHOWNIA S.A. IN NUMBERS:

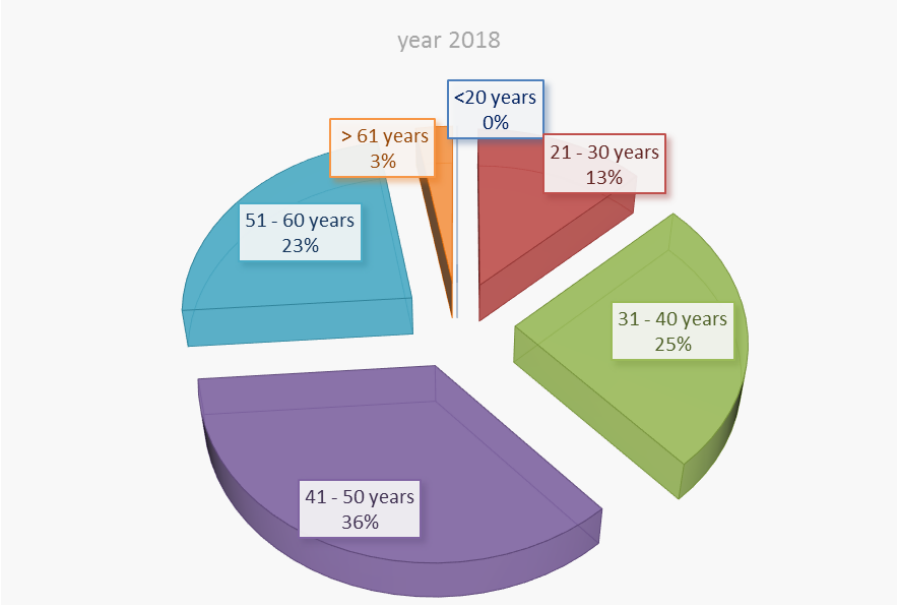
Total number of employees at the end of 2018 was 107 persons, of which 39 women.

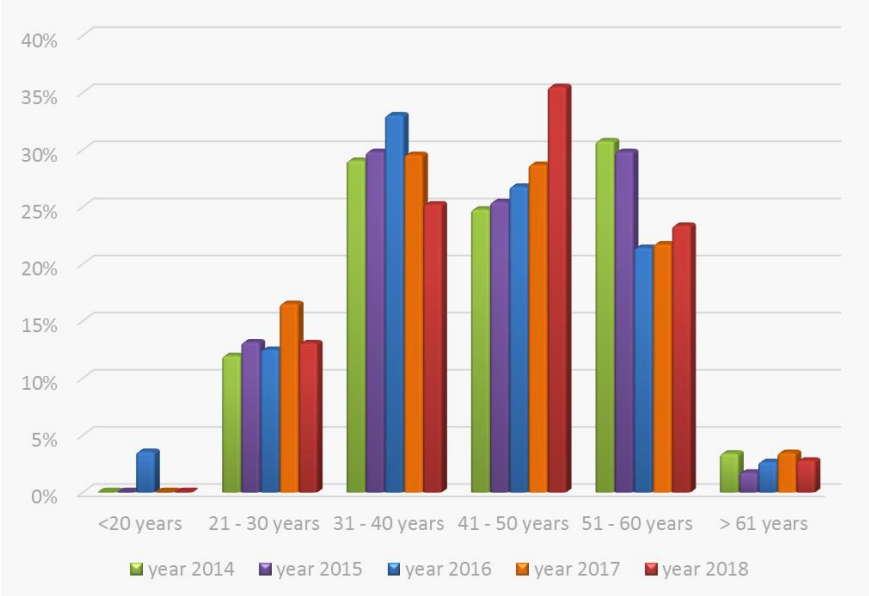
Employment structure according to education



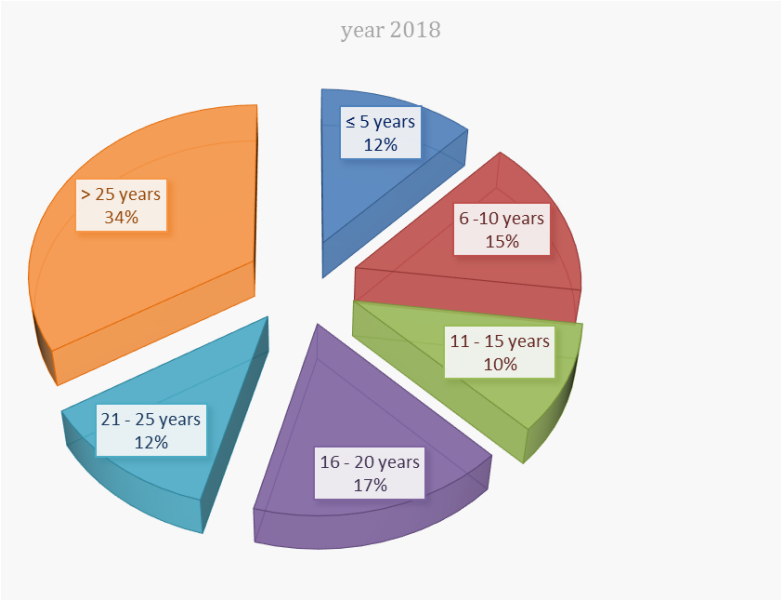


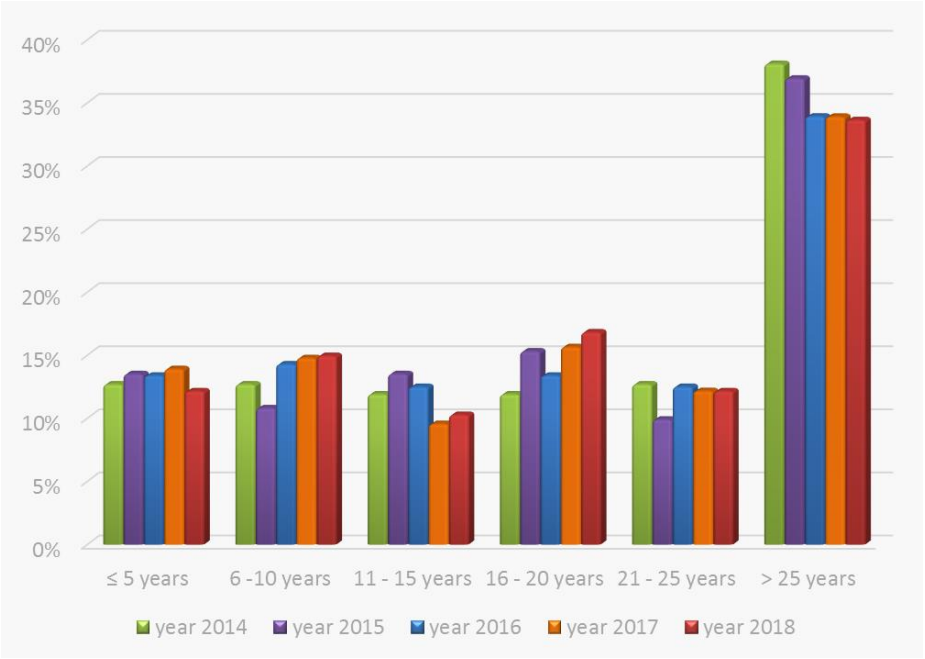
Employment structure according to age



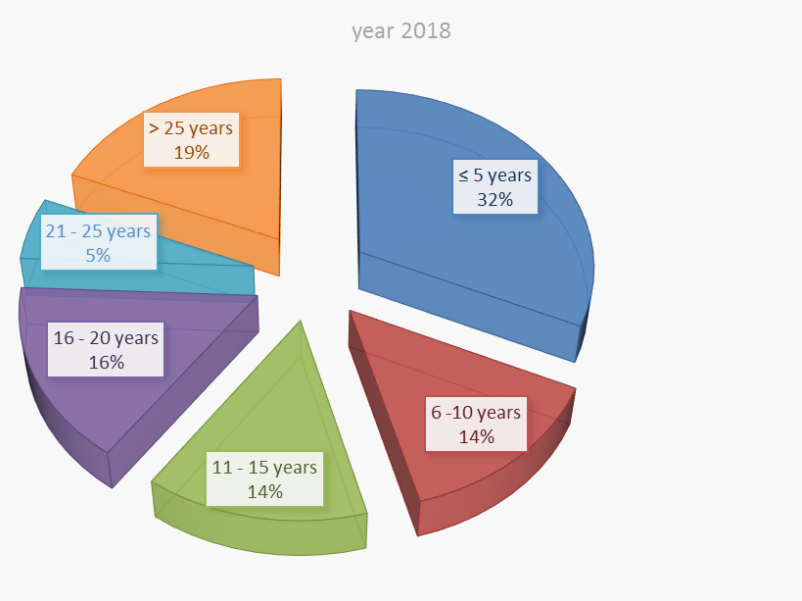


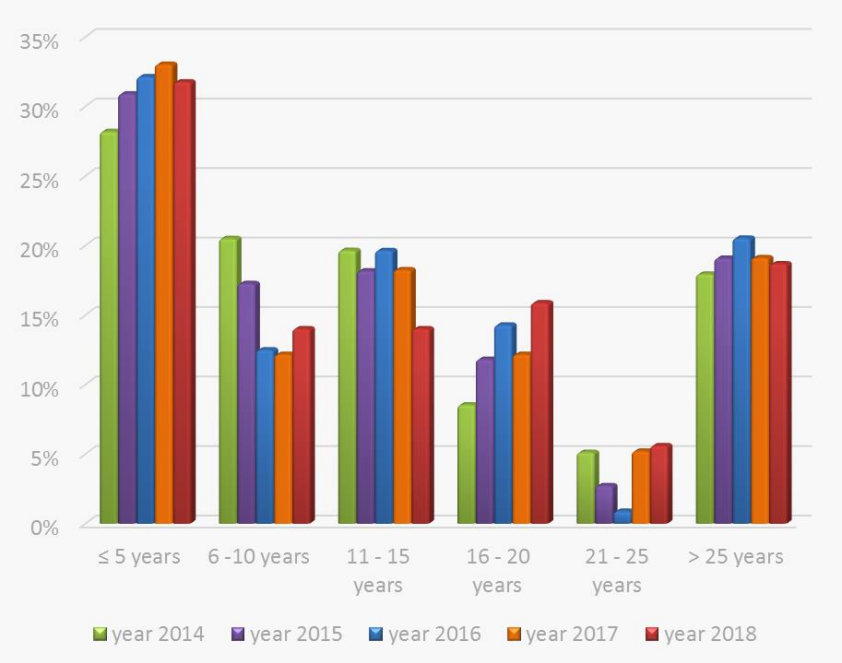
Employment structure according to general seniority



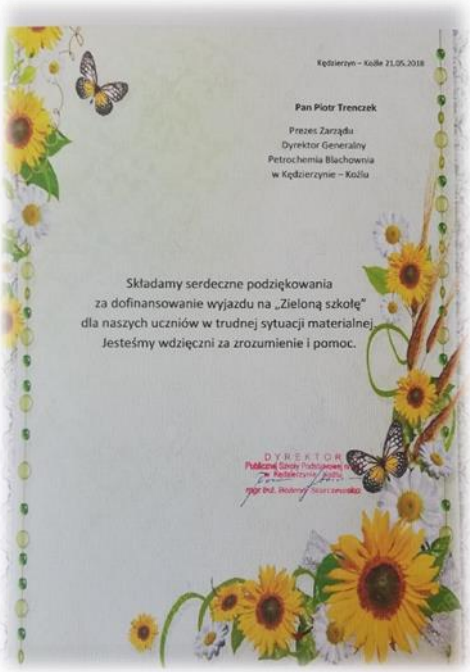


Employment structure according to seniority in the company





COOPERATION WITH LOCAL COMMUNITY


Kędzierzyn – Koźle 21.05.2018

Pan Piotr Trenczek

Prezes Zarządu
Dyrektor Generalny
Petrochemia Blachownia
w Kędzierzynie – Koźlu

Składamy serdeczne podziękowania
za dofinansowanie wyjazdu na „Zieloną szkołę"
dla naszych uczniów w trudnej sytuacji materialnej.
Jesteśmy wdzięczni za zrozumienie i pomoc.

Independently of its production activity, the Company is also involved in social activities.
Wherever possible, we provide financial support to foundations helping those in need of the local community.
The Company is one of the founders and sponsor of local Foundation "Be the Human", which takes the care of people from the area of our city, who are in a difficult life situation.
By supporting the activities of the Municipal Cultural Centre in Kedzierzyn-Koźle we help to organize sports and cultural events for citizens.
By advertising we support sports activities conducted by the Riding Club "Lewada", TKKF "Blachowianka".
The company also provides apprenticeships for secondary and high schools students. Starting from the school year 2014/2015 in cooperation with management and teachers of Technical School No 3 the Company organize practical training for students of chemical profile.


ZARZĄD SPÓŁKI
Petrochemia Blachownia SA

DZIĘKUJĄ
ZA KOLEJNY ROK WSPÓŁPRACY I ŚRODKI PRZEKAZANE
NA
LECZENIE CHORYCH,
REHABILITACJĘ NIEPEŁNOSPRAWNYCH, POMOC UBOGIM.

Stokrotne Dzięki!

Fundacja „Bądź Człowiekiem"

We also organize team building meetings for Company's employees and their families.
We also do not forget about our retirees. Meetings organized around Christmas Eve, which are an excellent opportunity to meet long time unseen, former co-workers became our tradition.


POLSKI CZERWONY KRZYŻ

PODZIĘKOWANIE

dla

PETROCHEMIA- BLACHOWANIA S.A.

Za okazane wsparcie oraz pomoc w realizacji działań Polskiego Czerwonego Krzyża.
Dzięki Państwu możemy dotrzeć z naszą pomocą tam,
gdzie jest ona najbardziej potrzebna.

„Człowiek jest wielki nie przez to co ma,
nie przez to kim jest, lecz przez to,
czym dzieli się z innymi"
Jan Paweł II

Dyrektor Opolskiego Obszaru Okręgowego
Polskiego Czerwonego Krzyża w Opolu
Danuta Półpiczak

OPOLE 2018 r.

All activities of the Company are conducted so that a positive image of the Company was upheld and the local community was kept informed about our activities and immediate plans.