Unipetrol
ORLEN GROUP

JOINT REPORT **2019**

ON OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENTAL PROTECTION

Content

1. Introducing the Unipetrol Group

Unipetrol is a leading refining and petrochemical group in the Czech Republic and a major player in Central and Eastern Europe. The companies of the group mainly produce and sell refinery products, chemical and petrochemical products, polymers and specialty chemicals. Unipetrol also operates its own transport services and funds its research and development.

The group focuses on three strategic business segments:

- refining crude oil and wholesale of refinery products,
- petrochemical and agrochemical production,
- motor fuel retail.

Unipetrol is the 100% owner of the following companies:

- Unipetrol RPA – manufacturer and vendor of refinery, petrochemical and agrochemical products, the largest crude oil processor in the Czech Republic for a wide range of products with a total annual capacity of 8.7 million tonnes. The registered branches of Unipetrol RPA consist of the Benzina petrol station network and the Polymer Institute Brno.
- Unipetrol Doprava – a provider of professional railway transport for chemical, petrochemical and other products, and related services.
- Paramo – the largest manufacturer of bitumen, lubricants, fuel oil and other refinery products.
- Spolana – a part of the Unipetrol Group since 2016 and manufacturer of polyvinyl chloride, caprolactam, sulfuric acid and ammonium sulphate.

The Unipetrol Group companies produce:

- Refinery products: petrol, diesel, light heating oil, aviation fuel, LPG, asphalts, naphtha, lubrication and heating oils.
- Petrochemical products: ethylene, propylene, C4 fraction, benzene, high-density polyethylene, polypropylene and PVC.
- Agrochemical products: ammonia, highly conductive carbon black, caprolactam, sulfuric acid, oleum and ammonium sulphate.

2. Important milestones of the Unipetrol Group in 2019

The following can be considered the most important events of 2019 at the Unipetrol Group in terms of protecting the environment and occupational health and safety:

- Submission of an updated Safety Report for the Litvínov locality to the Regional Office of the Ústí nad Labem Region by the deadline of 30 June 2019 for approval. The update consisted mainly in merging and recalculating the impacts of Unipetrol's major accident risk sources and of the former Rafinérie branch plant.
- Submission of an updated Safety Report for the Kralupy refinery unit to the Regional Office of the Central Bohemian Region by 31 July 2019 for approval. The update was mainly related to the cessation of the former Rafinérie branch plant.
- Ceremonial opening of the training centre for new employees with a focus on practical training in the area of operation, safety and environmental protection in chemical production.
- Commissioning of the intensified DeSOx technology for the reduction of sulfur oxides at the T700 heating plant.
- Construction of a new power unit of an ethylene unit in the petrochemical part of the production area meeting the BAT requirements for large combustion plants.
- Completion of revitalization of the fuel terminal - commissioning of the VRU recuperation unit in Paramo Pardubice. Completion of installation of low-emission burners at the boiler room (boilers K8, K9) and low-emission burners at the RDH unit in Kolín's Paramo.
- The project of flood protection PPO Neratovicko Q100 continued in Spolana.

3. Role of employees

Unipetrol Group employees play a key role in protecting the environment and in activities associated with occupational health and safety and fire prevention. The individual companies have therefore implemented an effective training system for all employees. The training and education of employees are part of the established management system, which is subject to regular review, evaluation and completion under ISO 9001, 14001, 50001 and OHSAS 18001 standards.

All employees are actively and continuously engaged in environmentally sound practices in order to protect the environment.

Thorough training applies to both the Group's employees and employees of external companies working at the production sites of the Group. The obligation to comply with environmentally sound practices, fire prevention and occupational health and safety principles are included in agreements with individual contractors.

Employee education is also improved through their familiarization with policies, operational regulations, organizational and management standards in the areas of environmental protection, safety and health protection, fire protection, environmental aspects of their activities, and objectives and programmes defined for and applicable to their workplace.

The active role of employees is also supported by a recently introduced IDEA platform that encourages the Group's employees to forward their own ideas to help meet and improve the Unipetrol Group's objectives, including those in the area of the HSEQ.

4. Communication with the public

The following are the main tools used by the Unipetrol Group to communicate with the public:

- Application of the principles of social responsibility (CSR) by the companies of the Unipetrol Group to cities and municipalities in the vicinity.
- Informing about the company's impact on the environment in the vicinity in the form of participation of representatives of the Unipetrol Group management at public meetings of councils of neighboring municipalities.
- Regular meetings with the mayors of the municipalities in the vicinity of the production plants, during which the participants are acquainted with all activities, including the area of environmental protection as well as information on the occurrence of non-standard operating situations.
- Green line operation of the Most and Kralupy Ecological Centers and internal communication sources (printed media, intranet, e-mail communication).
- Online connection of the company's alarm system at Chempark Záluží to the Police of the Czech Republic and the
- Litvínov and Most Municipal Police.
- Emergency SMS messages via an information channel for the towns of Most and Litvínov.
- Alerts, warning signal and sound systems at production sites and their surroundings.
- Public information provided via the Most and Kralupy nad Vltavou Ecological Centre.
- Cross-border cooperation with Saxony within a joint working group and through the Most Ecological Centre.
- Internet and social networks: Facebook, Twitter, Instagram, YouTube.
- Interactive and educational programmes for primary and secondary school students, such as Path to the Secret of Oil.

5. Integrated management systems policy

In 2019, Unipetrol top management approved an Integrated Management System policy based on the core values of the Unipetrol Group and the PKN Orlen Group called ***Responsibility – Development –People – Energy – Reliability***. In line with the strategic focus of the Groups' companies, the policy includes commitments in the fields of occupational health and safety, environmental protection, quality, energy management, ethical standards and protection of property.

The Integrated Management System policy is published on the website of each company of the Group.

6. Integrated management systems

Established management systems are an important factor in environmental protection, product quality, occupational health and safety, fire protection and the prevention of major accidents. Unipetrol Group companies have a certified Quality Management System (QMS), Environmental Management System (EMS) and Health and Safety Management System (HSMS) in place as a guarantee of systemic access for the customers and their needs, product quality and service delivery, environmental protection and occupational health and safety. Most companies have implemented and certified the Energy Management System (EnMS), and thereby declared their commitment to optimize energy use, while also meeting the legal requirements of the Energy Management Act.

The aforementioned management systems are certified according to international standards ISO 14001, OHSAS 18001, ISO 9001 and ISO 50001. In 2020, the transition to the HSMS ISO 45001:2018 system standard is planned, which will replace the OHSAS 18001 certification.

In May and June 2019, a recertification audit of QMS, EMS, HSMS a EnMS management systems took place in Unipetrol, Unipetrol RPA (incl. Benzina and Polymer Institute Brno registered branches), Unipetrol Doprava and Petrotrans. Lloyd's Register Quality Assurance Certification organisation confirmed compliance with system standards.

In June 2019, Paramo underwent a control audit by Lloyd's Register Quality Assurance covering all three systems – EMS, HSMS and QMS (ISO 9001:2015, ISO 14001:2015, OHSAS 18001: 2007).

In June 2019, Spolana successfully passed the QMS, EMS, HSMS and EnMS recertification audit conducted by TÜV Rheinland Česká Republika s.r.o.

Unipetrol RPA has a certified sustainability system for producing motor fuels with biofuels (ISCC). The latest audit, which verified compliance with the system requirements, was conducted in November 2019 by TÜV SÜD Czech s.r.o.

Unipetrol Doprava has implemented a Safety and Quality Assessment System for Logistics Service Providers (SQAS). The system was successfully recertified in October 2018.

Certified/verified Unipetrol Group management systems in 2019

Company	ISO 9001	ISO 14001	OHSAS 18001	ISO 50001	SQAS	RC	ISCC
Unipetrol	●	●	●	●		●	
Unipetrol RPA (incl. Benzina registered branches)	●	●	●	●		●	●
Unipetrol RPA – PIB registered branch	●			●			
Unipetrol Doprava	●	●	●	●	●	●	
Paramo	●	●	●				
Spolana	●	●	●	●		●	

Certificates are published on the website of each company of the Group.

7. Responsible Care

The Responsible Care (hereinafter referred to as the R.C.) programme is a voluntary, worldwide initiative of the chemical industry aimed at promoting the industry's sustainable development by improving the safety of operations at facilities and during product transport and protecting human health and the environment. The programme represents a long-term strategy coordinated by the International Council of Chemical Associations (ICCA) and in Europe by the European Chemical Industry Council (CEFIC). The contribution of the R.C. programme to sustainable development was acknowledged by a United Nations Environment award presented at the World Summit in Johannesburg.

The national version of the R.C. programme initiative was officially launched in October 1994 by the Minister of Industry and Trade of the Czech Republic and the President of the Association of Chemical Industry of the Czech Republic (SCHP ČR). Since 2008, the programme has met the conditions of the Global Charter of Responsible Care.

Authorization to use the Responsible Care programme logo has been regularly granted to UNIPETROL, a.s. and Unipetrol Doprava on the basis of successful public defence in 2017. After renewing the membership of Unipetrol RPA in SCHP CR, this company's right to use the RC logo was also defended in 2017. The three companies may use the Responsible Care logo until 2021, when they will again publicly defend their right.

Paramo is no longer a member of the Chemical Industry Association of the Czech Republic and therefore does not make use of the authorization, although it continues to fulfil its principles.

In 2018, Spolana defended the right to use the RC logo for the ninth time.

8. Compliance with environmental protection regulations

The fact that no violation of the requirements of environmental laws or imposition of sanctions took place in 2019 testifies to the consistent effort to comply with environmental protection regulations.

The operating conditions and emission limits stipulated in the integrated permits for all Unipetrol RPA facilities were met during 2019. In 2019, there was no violation of legislative requirements in the area of air and waste.

All activities at Paramo and Spolana in 2019 were conducted in full compliance with environmental protection legislation.

9. Integrated pollution prevention

The obligations of selected industrial enterprises in the field of integrated pollution prevention (IPPC) are regulated by Act No. 76/2002, as amended. All Unipetrol RPA production units, including the refineries in Litvínov and Kralupy nad Vltavou, fall under the IPPC Act and have valid integrated permits issued by the Regional Authorities of the Ústí nad Labem and Central Bohemia regions. These permits are continuously updated in connection with the requirements of the amended legal regulations and the fulfilment of conditions, implementation of investment projects, changes in technological equipment or changes in the substances used.

During 2019, a total of 16 changes to integrated permits were issued for Unipetrol RPA equipment and included, for example, the following:

- approval of updated operating rules of air pollution sources and emergency plans of individual production equipment,
- approval of the newly issued operating rules of air pollution sources and emergency plan for PE3 production unit,
- updating the description of the equipment of individual productions as a result of approved planned changes in the given equipment,
- extension of the Kralupy refinery permit for the discharge of wastewater and approval of the updated emergency plan and operating rules,
- extension of the permit for the discharge of wastewater from discharges No. 1 A - 1 D, No. 2 and No. 3,
- approval of the operational test for dosing the plastic paralysis fraction on the gas oil hydrogenation unit at Litvínov refinery,
- approval of the operational test of Chezacarb dosing of combustion products in T700 ,
- implementation of best available techniques (BAT) requirements under Directive of the European Parliament and of the Council 2010/75/EU for the production of large quantities of organic chemicals (integrated permit for the "Ethylene unit" device),
- implementation of best available techniques (BAT) requirements under Directive of the European Parliament and of the Council 2010/75 / EU for large combustion plants (power-generating unit for the new ethylene unit),
- permission to operate a new backup source,
- permission to operate sources used within the scope of the new polypropylene silos.

In the course of 2019, the preparation of material was started according to the BAT conclusions, required large combustion plants, which served as a basis for reviewing the mandatory operating conditions set out in the integrated permit for the “Energy services unit” facility. Through a technical working group set up by the Ministry of Industry and Trade of the Czech Republic, Unipetrol RPA engaged in the preparation of a document on the best available techniques for the purification of chemical industry gases. As part of the preparation, the first version of this draft document was commented on during 2019.

In 2019, the Regional Office of the Ústí nad Labem Region reviewed the binding conditions set out in the integrated permit for the "Litvínov refinery" plant and for the "Production of polypropylene and polyethylene" plant according to the Act on integrated prevention and pollution abatement and found that the conditions are met, up-to-date and in line with the relevant BAT conclusions.

All technologies operated by Paramo have valid integrated permits. CC Pardubice acquired a joint integrated permit for the Energy, Asphalts, Fuels and Oils operations, issued by the Regional Office of the Pardubice Region. During 2019, the IP was updated once (commissioning of tanks within the revitalization of the fuel terminal, including the additive unit and VRU of the recuperation unit, extension of the permit for the discharge of wastewater, containing a particularly dangerous harmful substance, into the sewerage system, and an update of the Plan of Measures in the Event of an Accident in the Handling of Defective Substances). CC Kolín received one integrated permit issued by the Regional Office of the Central Bohemian Region. During 2019, the IP was updated once (an update of the Plan of Measures in the Event of an Accident in the Handling of Defective Substances, approval of Operating Rules for the company heating plant and technologies operated in CC Kolín related to the installation of low-emission burners).

Spolana received a total of four integrated permits to operate the facility. In 2019, the Regional Authority issued a total of three amendments to the integrated permits. The changes concerned the permission to operate the stationary listed "Gas Boiler Room" source inclusive of approval of the operating rules, permission to discharge waste water into surface waters and permission to build a temporary tapping station and storage site of ethylene.

10. Overview of valid integrated operating permits

Production unit	Integrated permit – issuer
Unipetrol RPA	
Production of polypropylene and polyethylene	Regional Authority of the Ústí Region
Steam cracker	Regional Authority of the Ústí Region
Production of ammonia	Regional Authority of the Ústí Region
Mazut gasification plant	Regional Authority of the Ústí Region
Energy services unit	Regional Authority of the Ústí Region
Production of dicyclopentadiene and non-hydrogenated C9 fraction	Regional Authority of the Ústí Region
Litvínov refinery	Regional Authority of the Ústí Region
Kralupy nad Vltavou refinery	Regional Authority of the Central Bohemia Region
Paramo	
Refinery plant, Cost Centre Pardubice	Regional Authority of the Pardubice Region
Cost Centre Kolín	Regional Authority of the Central Bohemia region
Spolana	
Energetic materials and toxic waste landfill	Regional Authority of the Central Bohemia Region
Production of chlorine and sodium amalgam by electrolysis	Regional Authority of the Central Bohemia Region
Production of polyvinyl chloride (PVC)	Regional Authority of the Central Bohemia Region
Production of caprolactam and sulphuric acid	Regional Authority of the Central Bohemia Region

11. Emissions into the environment

Pollutant emissions into the environment stabilized over the past five years at the levels determined by substantial green investments made in the previous decade. Individual emissions into the environment are listed in the following chapters.

11.1 Wastewater discharge

The amount of discharged wastewater in Unipetrol RPA corresponds to the long-term average of the amount discharged and is partly affected by the total precipitation. The concentration of pollutants in wastewater shows a long-term steady state and the amount of pollutants is directly proportional to the amount of wastewater discharged. In terms of the amount of water and the content of pollutants in it, 2019 did not deviate significantly from the values of recent years. Compared to last year, the quantity of all reported indicators (CHSKCr, BSK5, NL and petroleum substances) dropped.

The wastewater treatment plant at the Kralupy refinery underwent extensive refurbishment in 2013–2015. In 2016–2017, the treatment plant commenced a two-year trial operation and from 1 January 2018 it started operating permanently. We are now monitoring the level of reduction in discharged pollution. In 2019, the validity of the existing limits for wastewater discharges were extended until 31 December 2023.

The amount of pollution discharged at Spolana is steady, except for mercury, whose quantity has been drastically reduced. In 2019, a larger amount of 1.2-EDC was released.

The rate of transferred wastewater pollution at Paramo has not changed significantly over the years. A slight increase in pollution (at CC Pardubice) is taking place as shown by the “petroleum substances” indicator and is occuring in connection with intensified groundwater remediation pumping into the sewerage as part of the HZ PARAMO (Stage 1) remediation and the hydraulic groundwater protection (HOPV) system . Wastewater pollution at HS Kolín (recipient Hluboký potok) is steady.

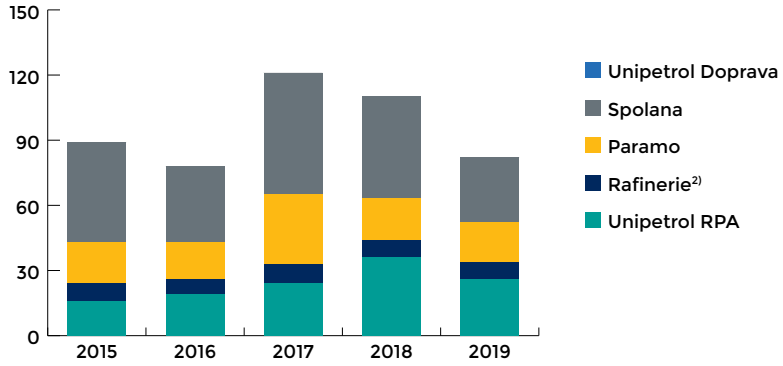
The balance of wastewater pollution indicators for the Benzina registered branch cannot be furnished, as the monitored parameters in the petrol station network are not consistent and cannot be included in the overall overview. In the overall evaluation of individual petrol stations, the monitored parameters have not exceeded the value of "m".

The pollution contained in the wastewater of Unipetrol Doprava is directly proportional to the number of performed cleanings of equipment containing harmful substances.

Pollutants discharged via wastewater by the Group (t/year)[1)]

Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	BSK_5 (Chemical oxygen demand)	16	19	24	36	26
Rafinerie[2)]	BSK_5 (Chemical oxygen demand)	8	7	9	8	8
Paramo	BSK_5 (Chemical oxygen demand)	19	17	32	19	18
Spolana	BSK_5 (Chemical oxygen demand)	46	35	56	47	30
Unipetrol Doprava	BSK_5 (Chemical oxygen demand)	0	0	0	0	0
Unipetrol Group	**BSK_5** (Chemical oxygen demand)	**89**	**78**	**121**	**110**	**82**

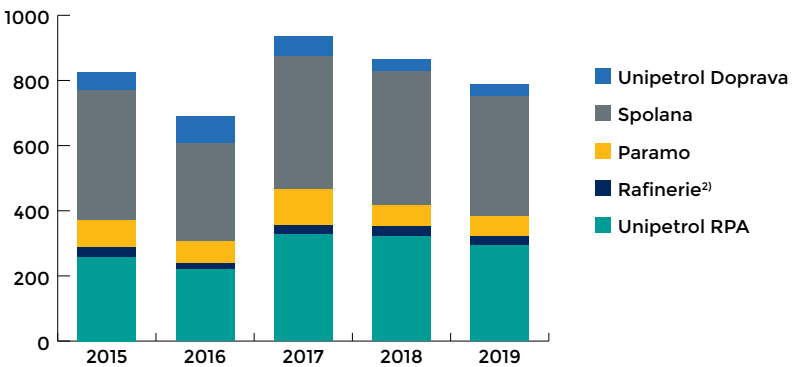
[1)] The registered branch Benzina is not extensively monitored, and representative data cannot be evaluated.
[2)] Only the Kralupy site. No direct discharge at Litvínov.



Pollutants discharged via wastewater by the Group (t/year)[1)]

Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	$CHSK_{Cr}$ (Biochemical oxygen demand)	258	220	328	321	293
Rafinerie[2)]	$CHSK_{Cr}$ (Biochemical oxygen demand)	30	18	28	32	29
Paramo	$CHSK_{Cr}$ (Biochemical oxygen demand)	84	69	110	62	61
Spolana	$CHSK_{Cr}$ (Biochemical oxygen demand)	399	301	407	412	370
Unipetrol Doprava	$CHSK_{Cr}$ (Biochemical oxygen demand)	55	82	63	39	36
Unipetrol Group	**$CHSK_{cr}$** (Biochemical oxygen demand)	**826**	**690**	**936**	**866**	**789**

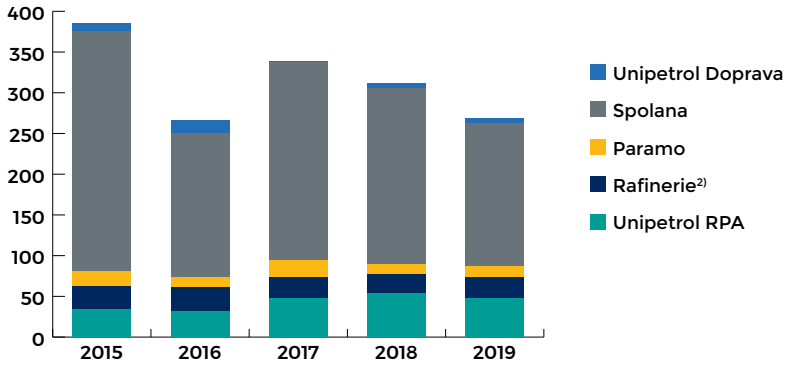
[1)] The registered branch Benzina is not extensively monitored, and representative data cannot be evaluated.
[2)] Only the Kralupy site. No direct discharge at Litvínov.



Pollutants discharged via wastewater by the Group (t/year)[1)]

Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	NL (Suspended solids)	34	32	47.0	54	47
Rafinerie[2)]	NL (Suspended solids)	29	29	27.0	23	26
Paramo	NL (Suspended solids)	18	13	20.0	13	14
Spolana	NL (Suspended solids)	294	176	244.0	215	176
Unipetrol Doprava	NL (Suspended solids)	11	17	0.4	7	5
Unipetrol Group	**NL** (Suspended solids)	**385**	**267**	**338**	**312**	**268**

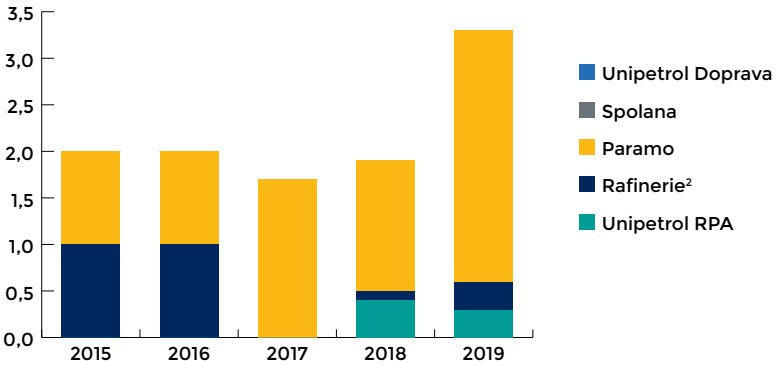
[1)] The registered branch Benzina is not extensively monitored, and representative data cannot be evaluated.
[2)] Only the Kralupy site. No direct discharge at Litvínov.



Pollutants discharged via wastewater by the Group (t/year)[1)]

Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	petroleum substances	0	0	0	0.4	0.3
Rafinerie[2)]	petroleum substances	1	1	0	0.1	0.3
Paramo	petroleum substances	1	1	2	1.4	2.7
Spolana	petroleum substances	-	-	-	-	-
Unipetrol Doprava	petroleum substances	0	0	0	0.0	0
Unipetrol Group	**petroleum substances**	**2**	**2**	**2**	**1.9**	**3.3**

[1)] The registered branch Benzina is not extensively monitored, and representative data cannot be evaluated.
[2)] Only the Kralupy site. No direct discharge at Litvínov.



11.2 Waste management

The decrease in the amount of waste in Unipetrol RPA in 2019 was caused by a smaller amount of cleaning operations. Waste production in the Litvínov refinery in 2019 was comparable to its production of previous years. The increased production of hazardous waste at the Kralupy refinery was caused by higher production of residual lyes and DEA in 2019. The lower generation of hazardous waste at Paramo in 2019 is due to the minimum volume of waste slop oils at the CC Pardubice and CC Kolín operations. At the same time, the production of waste by investment projects was also brought to the minimum.

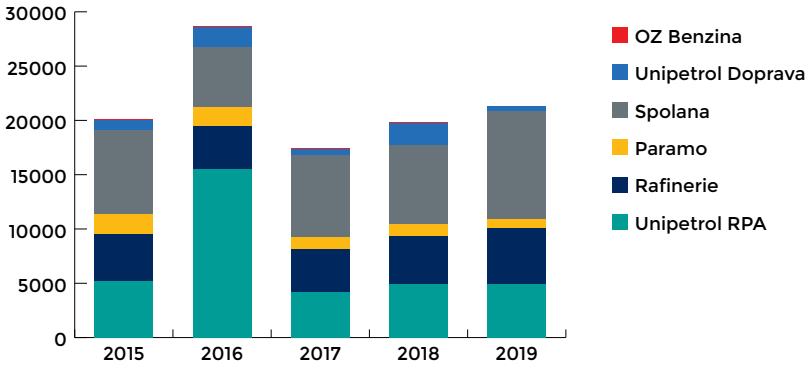
The decrease in waste at Unipetrol Doprava is related to the final closure of the flushing station in Neratovice and the relocation of the railway maintenance section (maintenance of the track superstructure, subbase and FM) to Unipetrol RPA.

The increase in the production of hazardous waste in Spolana is related to the shutdown of amalgam electrolysis.

In the case of the Benzina registered branch, the balance does not include any waste generated by petrol stations, but only waste created by investment projects and other contracts. The originators of the remaining waste production are the petrol station tenants operating as independent business entities.

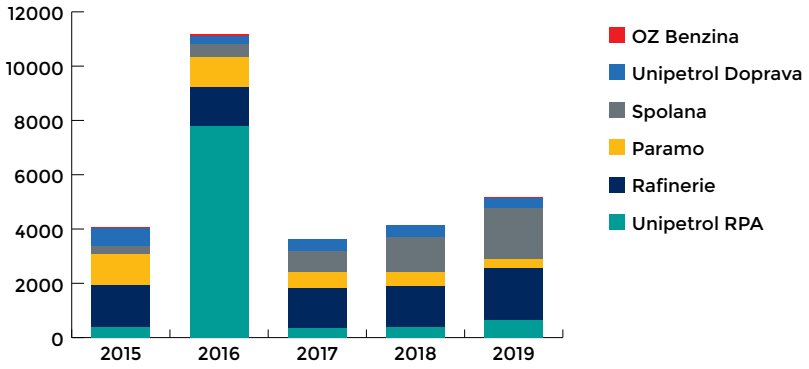
Waste generated by the Group (t/year) – total

Company	2015	2016	2017	2018	2019
Unipetrol RPA	5 177	15 514	4 165	4 932	4 896
Rafinerie	4 336	3 928	4 003	4 409	5 180
Paramo	1 841	1 796	1 079	1 072	788
Spolana	7 745	5 489	7 510	7 364	9 997
Unipetrol Doprava	953	1 870	633	1 985	387
OZ Benzina	40	52	16	28	16
Unipetrol Group	**20 092**	**28 648**	**17 405**	**19 790**	**21 264**



Waste generated by the Group (t/year) – only hazardous waste

Company	2015	2016	2017	2018	2019
Unipetrol RPA	389	7 787	347	369	651
Rafinerie	1 540	1 421	1 470	1 546	1 915
Paramo	1 128	1 128	591	494	297
Spolana	329	473	759	1 285	1 907
Unipetrol Doprava	654	300	463	443	372
OZ Benzina	36	49	2	7	10
Unipetrol Group	**4 076**	**11 158**	**3 633**	**4 144**	**5 152**



11.3 Air protection

The total emissions of the Refinery in 2019 were in most parameters comparable to 2018. There was a significant reduction of SO_2, where the autumn 2018 start of dosing of the DESOX additive at the fluid cracking unit at the Kralupy refinery had a positive effect.

In 2019, emissions at Unipetrol RPA had already stabilized and were reduced mainly due to investment projects at the T700 heating plant and strict adherence to operational discipline, which results in fewer failures.

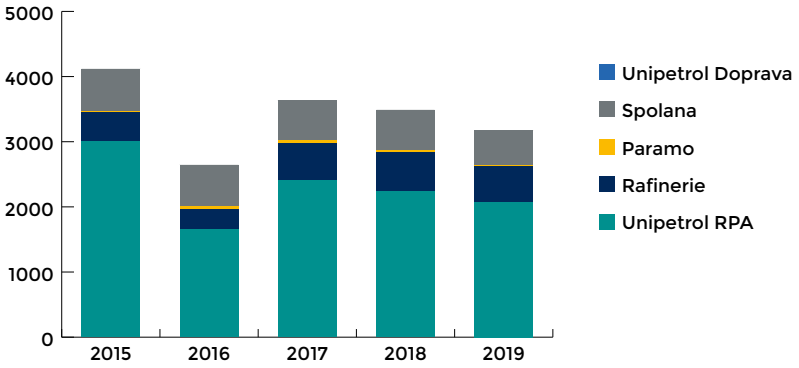
At Paramo, only natural gas was burned in the boiler houses at CC Pardubice and CC Kolín, which in the long term led to low emissions of sulphur dioxide, solid pollutants and volatile organic compounds. Low emissions from combustion processes have been achieved despite increased oil processing at Kolín. This result was also because of eliminating air pollution sources during fuel operation and limiting the total power input of the boiler room at CC Pardubice, where only the K1 boiler was operated, the K2 boiler was used as a backup source and the K3 boiler was disconnected. In order to meet the new emission limits that will be in effect from 1 January 2020, the existing burners have been replaced with new low-emission burners at the CC Kolín boiler house. Higher VOC emissions occur due to the gradual expansion of the storage capacity for petroleum hydrocarbons (petrol, diesel).

At Spolana, SO2 emissions decreased as a result of less coal burnt and more use of the gas boiler during production.

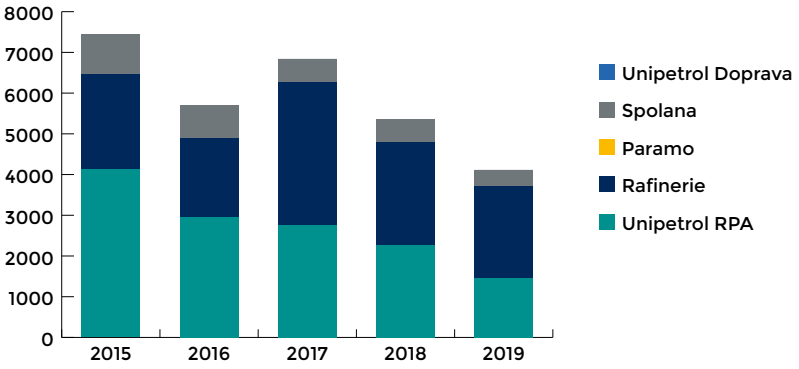
At Unipetrol Doprava, the quantity of VOC used at the cleaning and steaming station of road tankers and rail tankers is around one tonne per year.

Pollutants released into the air by the Group (t/year)

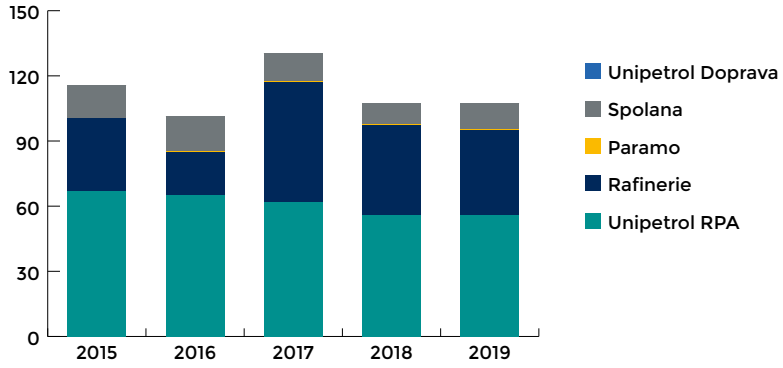
Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	NOx	3007	1648	2400	2237	2077
Rafinerie	NOx	440	322	582	599	540
Paramo	NOx	28	36	39	42	28
Spolana	NOx	642	644	616	609	523
Unipetrol Doprava	NOx	0	0	0	0	0
Unipetrol Group	**NOx**	**4117**	**2650**	**3637**	**3487**	**3168**



Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	SO_2	4124	2959	2771	2261.0	1470
Rafinerie	SO_2	2342	1934	3490	2534.0	2236
Paramo	SO_2	3	3	1	0.4	0
Spolana	SO_2	978	811	585	557.0	416
Unipetrol Doprava	SO_2	0	0	0	0.0	0
Unipetrol Group	**SO_2**	**7447**	**5707**	**6847**	**5352.4**	**4122**

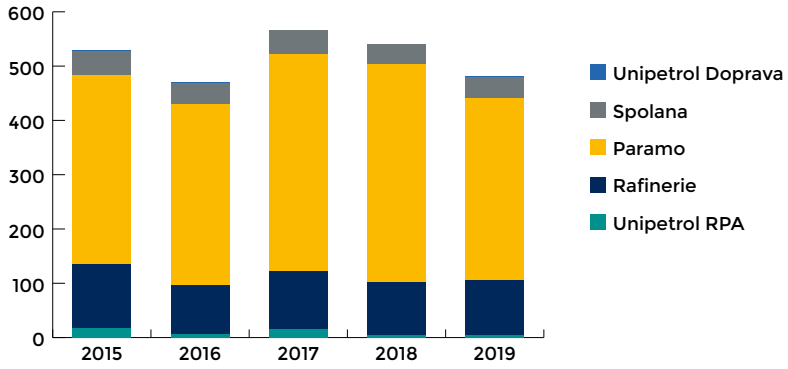


Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	Solid pollutants	67.0	65.0	62.0	56.0	56.0
Rafinerie	Solid pollutants	33.2	20.0	55.0	41.0	39.0
Paramo	Solid pollutants	0.4	0.4	0.5	0.5	0.5
Spolana	Solid pollutants	15.0	16.0	13.0	9.8	12.0
Unipetrol Doprava	Solid pollutants	0.0	0.0	0.0	0.0	0.0
Unipetrol Group	**Solid pollutants**	**115.7**	**101.4**	**130.5**	**107.3**	**107.5**



Company	Indicator	2015	2016	2017	2018	2019
Unipetrol RPA	VOC	18	7	15	5	5
Rafinerie	VOC	117	90	107	97	101
Paramo	VOC[1)]	349	332	400	402	335
Spolana	VOC[1)]	44	40	43	35	39
Unipetrol Doprava	VOC	1	1	1	1	1
Unipetrol Group	**VOC**	**529**	**470**	**566**	**540**	**481**

[1)] 90% are fugative emissions, which are only reported on the basis of the purchase of solvents in the given calendar year.



11.4 CO_2 emissions and emission allowances trading

Regulation of carbon dioxide emissions under the EU scheme for carbon dioxide emission allowance trading (EU ETS).

In the third trading period of 2013–2020, the number of monitored CO_2 sources of emissions significantly increased, and the methods for calculating, monitoring and reporting CO_2 sources of emissions changed. Calculating freely allocated emission allowances has also undergone an important change.

Allowance allocation to Unipetrol Group companies under the 2013–2020 National Allocation Plan and actual CO_2 emissions in 2013–2019.

Allocation of allowances (thousand pcs) Real emissions (kt/y)	Unipetrol RPA	OZ Rafinerie[1)]	Paramo	Spolana	Unipetrol Group
Total allocation for the 2013 – 2020 period	10 159[1)]	6 494	445	1051	17 333
2013: Actual CO_2 emissions	3 062	772	47	232	4 113
2014: Actual CO_2 emissions	3 138	877	37	251	4 303
2015: Actual CO_2 emissions	2 841	888	36	239	4 004
2016: Actual CO_2 emissions	2 491	678	37	233	3 439
2017: Actual CO_2 emissions	3 324	954	42	207	4 527
2018: Actual CO_2 emissions	3 210	880	43	204	4 337
2019: Actual CO2 emissions	3 221	941	40	159	4 361

[1)] In2017, Unipetrol RPA and Česká rafinérská were merged. Up to 31 December 2018, the refineries were registered and kept as the Rafinérie registered branch.

According to the calculated emissions for 2019, the allocated annual amount of allowances at Unipetrol RPA, including refinery units covered approximately 46% of the annual emissions. 2020 allowances were used to cover the 2019 allowance deficit, and the remaining allowances were purchased on the market. These were verified in 2019 by an independent verifier and applications for free allocation for the 4th trading period of the EU ETS system have been submitted to the Ministry. The free allowances will be allocated after the values of the relevant benchmarks and correction factors have been updated.

In Paramo, CO_2 emissions decreased slightly in 2019 in connection with the actual operation of production units. It can be assumed that there will be no significant changes in CO_2 emissions in the future. Only a minor increase in CO_2 emissions can be expected due to the gradual increase in the processing of raw materials. In May 2019, a verification of the processed application for the free allocation of allowances for the 4th trading period of the EU ETS system took place at Paramo through an accredited company VERIFIKACE CZ. The statements for CC Pardubice and CC Kolín were subsequently duly sent together with all the necessary attachments to the Ministry of the Environment of the Czech Republic.

In Spolana, CO_2 emissions were reduced by lower coal consumption.

11.5 Other greenhouse gases

All companies of the Group operate production facilities in accordance with the Earth's ozone layer protection requirements and in line with existing international agreements. Cooling media have been replaced by more environmentally friendly refills over the past few years.

12. Management of primary raw materials and energy sources

To conserve primary raw materials and energy sources, the Unipetrol Group follows the principles of sustainable development and focuses its basic strategies on innovative approaches that lead to minimizing energy and material use, promoting continuous improvement in environmental performance and increasing energy efficiency. Companies of the Group that have successfully implemented energy management system certification in accordance with ISO 50001 have committed themselves under the framework of the Energy Policy. At some of the Group's companies, energy audits have been conducted in order to achieve additional energy savings.

Unipetrol RPA also focuses on minimizing energy losses. Under this programme, a large scale replacement of insulation is implemented including a major reconstruction of condensate systems. In 2019, the company invested CZK 98.9 million in the project, which represents a year-on-year increase of 50%. Within the capital group, an increasing emphasis is made on the continuing implementation of energy-efficient solutions (reducing consumption of energy, raw materials and production of waste and wastewater). Accordingly, the results of this pursuit are key parameters in the evaluation and approval of the project by investment commissions.

In 2020, the mechanical completion of the New Ethylene Unit Boiler House project will take place and the process of starting the new technological equipment will begin. The final phase of the project and the full operation of the facility are planned for 2021. This project is a key priority in ensuring the stable operation of the ethylene unit while in compliance with the strictest legislative regulations. In 2019, a pilot project, "Combustion One" was installed and tested focusing on the optimization of combustion in the pyrolysis furnace BA-107. The project was very successful and it was decided to continue with the same method in other pyrolysis furnaces.

The preparatory phase of the New Energy Source project in Chempark Záluží continues - a new gas heating plant will make a notable contribution to the efficient use of fuels and at the same time significantly reduce emissions of discharged substances according to all legislative requirements. Optimal variants are being evaluated currently, both in terms of investment costs and, above all, in terms of the required capacity. As part of efforts towards the efficient deployment of optimisation technologies, close attention is being paid to the Advanced Process Control (APC) in order to utilise its advantages further. In 2019 and 2020, the APC system will be installed at the T700 Heating Plant, which will significantly contribute to the optimization of operation and savings of primary raw materials, especially brown coal. The APC system used in the T700 HP will focus on the optimisation of the combustion process.

The completion of the EnMS Visual MESA project is an important step towards the acceptable consumption and use of energy. This system allows the best use of fuels and other media across the entire Chempark Záluží complex, starting with energy production at the T700 HP and consumption at all production units, i.e. refinery, petrochemical and agrochemical sections. The project was completed by the end of 2019 and in 2020 the focus will primarily be on the full tuning of the model and utilisation of the program. The main benefit is the fact that the created model evaluates individual technologies as a whole and seeks the optimum within the entire complex. An optional search for other optimization projects is also available.

In refining processes, great emphasis is placed on the best use of capacity, which contributes positively to the efficiency of energy consumed by production. To this end, initiatives to increase equipment reliability in this area are also continuing. Investment projects in the field of energy efficiency focus on optimizing the combustion in furnaces, where it is possible to use the experience gained from the "Combustion One" project and also install laser flue gas analyzers, which make it possible to reduce the oxygen content in the flue gas while maintaining a very low content of other emission substances (CO, particulate matter, etc.). This process makes the best use of fuel with improved emissions control. Another area that is being explored and where the potential benefits are analyzed is the use of flue gas heat to preheat other streams (furnace inlet air, water heating, etc.). Experience gained within the capital group is being used here.

Previous activities fit into the general effort to use low-potential heat. This sphere is under continuous development, especially in the 2021, when Unipetrol will participate in international projects with the aim of implementing innovative solutions.

The second field of innovation concerns industry 4.0, an area in which Unipetrol is engaged in the preparation of pilot projects aimed at minimizing losses, training operators and optimizing production processes.

The Benzina registered branch focuses mainly on the consumption of water, electricity and gas at petrol stations. Since 2017, energy consumption is regularly monitored. As from 2018, media consumption meters (electricity, water, gas) are being installed at selected petrol stations under the "Energy Management System" project. The aim is to evaluate and optimize energy consumption at individual petrol stations through online monitoring, when the consumption data will be compared and evaluated, offering opportunities to reduce consumption. In 2019, the installation of energy meters at petrol stations continued. At the same time, necessary steps were secured to start remote data transfer from these meters (online monitoring). The use of electricity at the petrol stations is also optimized through the introduction of low-energy appliances and technologies (LEDs).

In the Polymer Institute Brno registered branch, energy intensity is reduced mainly by the installation of new equipment. In 2018, a new pipe extruder, a film blower and a twin-screw extruder were installed. The replacement of the VISKOSYSTEM single-screw extruder with a newer COLLIN 45 E line was carried out in January 2019. This was followed by alterations carried out in 2019 to one of the buildings in the centre of the complex, which included the installation of thermal insulation and replacement of old windows with new plastic ones. A big event of 2019 within the city of Brno was the conversion of the steam pipeline to a hot water pipeline, a project which also included the buildings of the Polymer Institute Brno. The renovation in 2019 also included the replacement of old tubular heating bodies with new radiators with the expected energy savings due to the transition from the steam to the water pipeline.

Furthermore, savings on heating costs are expected due to the installation of thermocouples (heating season 2020/2021). The installation of a new HVAC is planned in the production hall in 2020, which will be combined with air recuperation. Savings in the cost of electricity are expected to be made by the provision of a central exhaust system and more economical heating in the winter by returning the filtered air back to the hall.

In the area of reducing energy intensity, Paramo has been implementing on a long-term basis projects contributing to the reduction of steam consumption used for heating products and pumping lines (using heat from steam produced by the incinerator to operate the Asphalt Plant). The heat losses in the steam pipelines are being reduced by optimising the length of the pipeline routes and by the installation of thermal insulation to selected tanks. Great attention is also paid to insulation within the Zero tolerance project in terms of steam leaks and missing or damaged insulation.

To reduce electricity consumption, new feed pumps were installed in Paramo (at the boiler room in 2016 in Kolín and at the boiler room in Pardubice in 2018).

The priority in improving energy efficiency in Spolana is to reduce the energy intensity of energy production, heat distribution losses, energy intensity of production technologies and energy intensity of buildings.

Efforts oriented on energy efficiency in Spolana in 2019 involved a heat replacement project implemented in non-production buildings and a change of heating from steam to gas boilers (in 7 buildings of the commercial zone). A new energy centre (2 gas boilers) was also built, which leads to a significant reduction in CO2 and NOx emissions and a reduction in the amount of heat produced for own consumption – to operate the technological equipment of the chemical plant. At the same time, the flow-through cooling of turbogenerators using water from the Elbe River was put out of operation.

As part of the modernization of the sulfuric acid plant at the caprolactam plant, a conceptual study of its reconstruction is being processed. Once put into operation, savings in the consumption of primary resources, especially natural gas, are expected to be made.

Attention is paid to the reduction of heat losses in the distribution - a study was prepared mapping the state of insulation in all production units and a target set for their revitalization.

In the field of energy management, Unipetrol Doprava focuses mainly on optimizing fuel consumption materials, electricity and technological and heating steam.

The first stage of modernization of the locomotive park (Vectron, Bizon), which is part of the company's strategy, was completed. A purchase of further economical multi-system locomotives is at the stage of preparation. In addition to the expected savings in fuels and electricity, the multi-system locomotives also help to reduce the emission load. In addition, electricity meters have been installed since the middle of the year, which also allow the measurement of recuperation. As the result of the recuperation, the locomotives returned a total of 245.4 MWh of electricity to the distribution system by the end of 2019.

Technological equipment is also being continuously modified together with the adjustment of technological procedures. Since 2016, sidings have been technically modified, e.g. photocells have been installed on the lighting towers of the siding yard. Controls for the heating of building No. 6419 were installed. In 2019, the first stage of the installation of energy-saving luminaires replacing the original ones in the Unipetrol RPA complex at Litvínov siding took place, as well as a change of the heating system of switches, installation of heating control, and the thermal insulation of buildings. The time needed for steaming and cleaning railcars has been reduced.

Water consumption by the Group (mil. m3/year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	16.8	14.3	18.4	18.2	18.5
Rafinerie Kralupy	2.9	2.3	2.0	2.0	2.0
Paramo	0.3	0.3	0.4	0.4	0.4
Spolana	18.5	16.3	15.8	16.2	15.9
Unipetrol Group	**38.5**	**33.2**	**36.7**	**36.8**	**36.8**

The positive trend is mainly because of specific energy consumption as a result of using production capacities. This always has a positive impact on the use of energy and raw materials, and it is therefore more appropriate to monitor the energy consumption coefficient in tonnes of oil equivalent (TOE) per tonne of production per year:

Energy consumption by the Group (thous.TJ/year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	8.6	7.9	9.2	9.1	9.1
Rafinerie Kralupy	16.7	14.0	17.3	17.4	18.1
Paramo	0.8	0.8	0.5	0.9	0.9
Spolana	3.7	3.2	3.4	2.7	2.6
Unipetrol Group	**29.8**	**25.9**	**30.4**	**30.1**	**30.6**

Specific energy consumption by the Group (TOE/t of production per year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	0.189	0.291	0.141	0.143	0.151
Rafinerie Litvínov	0.047	0.050	0.045	0.045	0.047
Rafinerie Kralupy	0.054	0.062	0.050	0.057	0.053
Paramo HS Pardubice	0.133	0.147	0.135	0.123	0.134
Paramo HS Kolín	0.225	0.240	0.290	0.317	0.281
Spolana	0.165	0.156	0.147	0.117	0.126

13. Environmental investments

Environmental investments are defined as investment projects directly triggered by environmental legislation and are closely linked to the application of integrated pollution prevention in practice or have a significant, positive environmental impact.

In 2019, the following environmental investments were made in the group.

Rafinerie

Investment projects in environmental protection valued at CZK 81 million were implemented by the Rafinérie units. The most important were:

- reconstruction of sewerage and sloping systems at the Litvínov and Kralupy refinery
- repairs of tank yards of storage tanks in the Kralupy refinery,
- repair of the sewerage system (troughs) on block 25.

Unipetrol RPA

Unipetrol RPA implemented investment projects in the field of environmental protection in the total amount of CZK 601 million. Among the most important were:

- continuation of the installation of DeSOx technology at T700 Heating Plant,
- construction of a new cracking unit's boiler room,
- reconstruction of the Celio sump,
- consolidation of chemical storage.

A number of other measures with a positive impact on the environment took place within the operating costs for the maintenance of the equipment.

Paramo

In Paramo, investment projects in the field of environmental protection reached a total of CZK 15.4 million. The most important were:

- revitalization of the fuel terminal – installation of the VRU unit (CC Pardubice, Paliva operation),
- installation of low-emission burners for boilers K8, K9 at the boiler room (CC Kolín, Energetika operation),
- installation of low-emission burners at RDH unit (CC Kolín, base oils section).

Spolana

In Spolana, investment projects in the area of environmental protection were implemented in the amount of CZK 70.5. The following were particularly significant:

- construction of a new energy centre,
- heating of non-production buildings,
- tapping of sulfur from roadtankers.

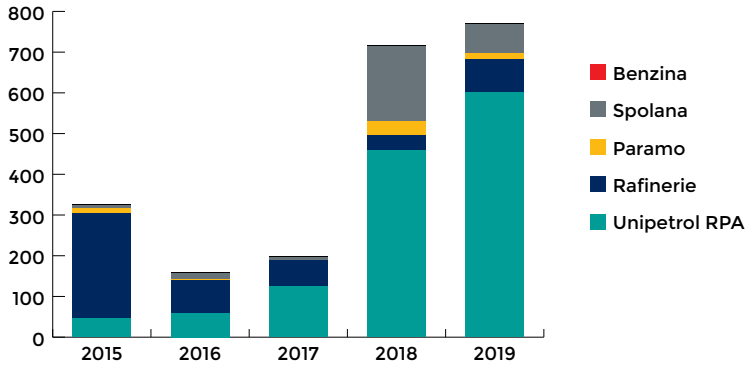
Benzina registered branch

The Benzina branch implemented projects in the field of environmental protection in the total amount of CZK 2.5 million. The investments were aimed at:

- new water connections and cancellation of individual drinking water supply,
- new sewer connections,
- reconstruction of water cannons,
- installation of a new wastewater treatment plant.

Investment costs for environmental protection at the Group (mil. CZK/year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	46.0	59.0	124.4	458.0	601.0
Rafinerie	258.0	81.0	64.0	38.0	81.0
Paramo	14.0	2.0	0.4	33.5	15.4
Spolana	7.2	15.9	8.2	186.4	70.5
Benzina	1.0	0.3	0.1	2.0	2.5
Unipetrol Group	**326.2**	**157.0**	**197.0**	**717.9**	**770.4**



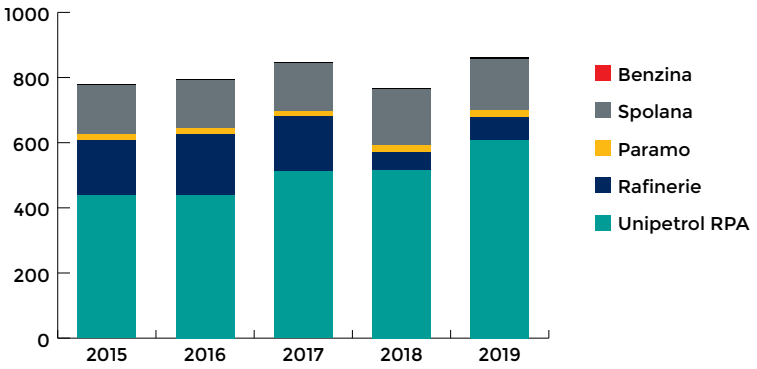
14. Environmental operating costs

Costs associated with operating installations for air protection, wastewater treatment, waste management, environmental management systems, emissions monitoring, environmental impact assessment (EIA process), integrated pollution prevention and other related environmental activities are called environmental operating costs.

Recently installed modern technologies with a high degree of raw material conversion, reduced amounts of waste and high energy efficiency have resulted in an overall reduction in environmental operating costs compared to the previous decade. Total environmental operating costs have more or less been stable in the past decade.

Environmental protection operating costs at the Group (CZK mil. per year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	437	439	512	516	608
Rafinerie	170	187	168	55	70
Paramo	18	17	17	20	22
Spolana	153	148	145	172	154
Benzina	3	3	4	4	8
Unipetrol Group	**782**	**794**	**846**	**767**	**862**

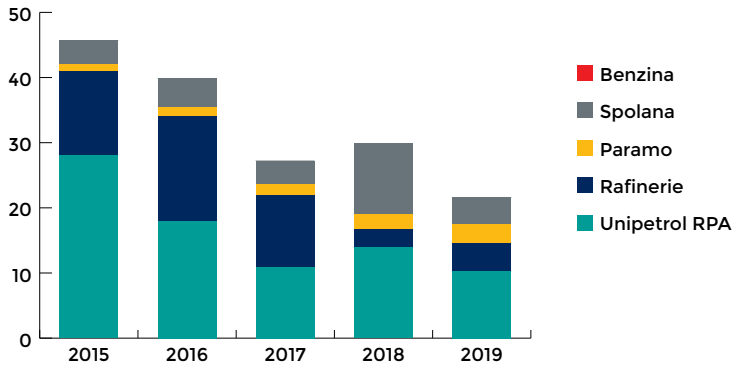


15. Total costs for environmental protection

The total environmental protection costs for the Unipetrol Group include environmental investment costs, environmental protection operating costs, costs for repairing previous environmental damage, expenses for air pollution, wastewater discharge, waste disposal in landfills, provisioning for landfill reclamation, and compensation for damage to forests by pollution.

Fees and payments for environmental pollution at the Group in 2015–2019 (mil. CZK/year)

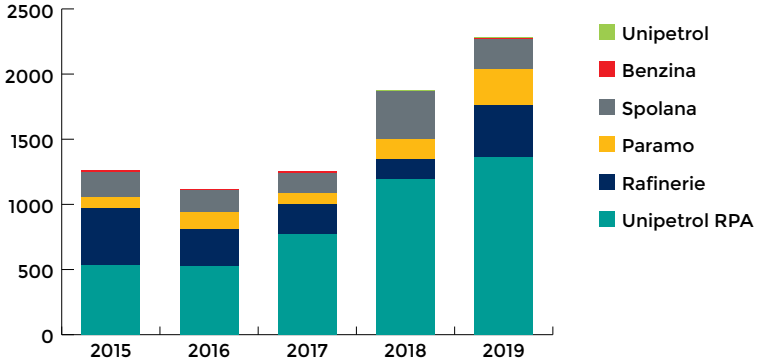
Company	2015	2016	2017	2018	2019
Unipetrol RPA	28	18.0	10.9	13.9	10.3
Rafinerie	13	16.0	11.0	2.8	4.2
Paramo	1	1.5	1.8	2.0	3.0
Spolana	4	4.3	3.5	10.9	4.1
Benzina	0	0.0	0.0	0.0	0.0
Unipetrol Group	**46**	**40.0**	**27.0**	**29.9**	**21.6**



The total costs for environmental protection in the group in 2019 reached approxiamately CZK 2.3 billion.

Total investment costs for environmental protection at the Group (mil. CZK/year)

Company	2015	2016	2017	2018	2019
Unipetrol RPA	532	524	771	1 192	1 362
Rafinerie	442	284	233	158	400
Paramo	80	129	79	146	274
Spolana	197	170	158	370	229
Benzina	10	7	9	7	7
Unipetrol	1	1	1	1	1
Unipetrol Group	**1 262**	**1 116**	**1 251**	**1 868**	**2 251**



16. Remediating old environmental burdens

Based on the decision of the Government of the Czech Republic related to privatization, Unipetrol Group companies entered into the following agreements with the Ministry of Finance of the Czech Republic to resolve ecological commitments sustained before privatization (Ecological Agreement):

1) Ecological Agreement No. 14/94, as amended by amendment No. 4 of 6 May 2019, concluded with Unipetrol
2) Ecological Agreement No. 32/94, as amended by amendment No. 2 of 6 May 2019, concluded with Unipetrol
3) Ecological Agreement No. 39/94, as amended by amendment No. 4 of 28 January 2019, concluded with Paramo
4) Ecological Agreement No. 58/94, as amended by amendment No. 5 of 28 January 2019, concluded with Paramo
5) Ecological Agreement No. 184/97, as amended by amendment No. 9 of 18 June 2019, concluded with Benzina reg. branch
6) Ecological Agreement No. 33/94, as amended by amendment No. 4 of 8 April 2009, concluded with Spolana

Litvínov

Location	Current status	Next stage
Růžodol lagoons	Post-remediation monitoring after removal of the oil sludge; project documentation processed for selecting the landscaping and the restoration contractor	Contractor selection
The works complex	Contamination clouds Nos. 1, 2c, 3, 6, 10 remediation completed and handed over, post-remediation monitoring performed at contamination cloud No. 4; Remediation work on contamination clouds Nos. 2, 5, 7, 9, 11 and in block 32 has not been finished yet	Project documentation for selecting contractor for remediation of KM 2a, 11 and 7b, selecting a contractor for KM2a, 11 and 7b, continuation of remediation or post-remediation monitoring at other clouds
Uhlodehta landfill	Remediation project documentation	Updated risk analysis
Solid industrial waste landfill	Updated risk analysis before completion	Updated risk analysis according to the conclusions
Lime sludge landfill II	Updated risk analysis before completion	Updated risk analysis according to the conclusions
Lime sludge landfill at the siding	Updated risk analysis before completion	Updated risk analysis according to the conclusions
Jižní předpolí/South foreland	Partly restored, updated risk analysis before completion	Updated risk analysis according to the conclusions
Fly-ash dump	Partly restored, updated risk analysis before completion	Updated risk analysis according to the conclusions
Contamination cloud No. 13	Protective remediation pumping is being done at the cost of the acquirer (Unipetrol)	Remediation feasibility study
'Nová voda střed' reservoir pumping	Protective remediation pumping	Protective remediation pumping, as per conclusions of the updated risk analysis
Růžodol contamination cloud No. 12 drain pumping	Protective remediation pumping	Protective remediation pumping, as per conclusions of the updated risk analysis

Kralupy nad Vltavou

Location	Current status	Next stage
The works complex	Updated risk analysis (AAR)	Final survey and remediation project documentation
Nelahozeves landfill	Remediation of pollution	Remediation of pollution, post-remediation monitoring
Remediation of pollution, post-remediation monitoring	Check of the Remediation project documentation for selecting a contractor	Remediation of pollution
"Gudrony" (acid tar waste from crude oil refining)	Feasibility study – verification and update	Remediation of pollution

Benzina registered branch (Distribution warehouses and the most important petrol stations)

Location	Current status	Next stage
ČS Ostrava-Muglinov	Implementation project of remediation	Remediation of pollution
DS Točník	Implementation project of remediation	Remediation of pollution
DS Liberec-Rochlice	Implementation project of remediation	Protective remediation pumping
Remediation of pollution	Final survey and processing of remediation project documentation in progress	Remediation of pollution
Šumperk DW	Update of risk analysis project documentation for contractor selection, protective remediation pumping	Processing of risk analysis update
Bartošovice DW	Remediation of pollution	Post-remediation monitoring
Pardubice Chrudimská PS	Remediation of pollution implem. project	Remediation of pollution
Přelouč PS	Remediation of pollution	Post-remediation monitoring
Nový Bohumín DW	Remediation of pollution	Post-remediation monitoring

Paramo Pardubice

Location	Current status	Next stage
Časy	Protective remediation pumping and monitoring up to 12/2019	Commencement of work on the final stage of remediation
Hlavečník	Protective pumping of precipitation water	Protective pumping of precipitation water
Surroundings of the main works – LIDL	Contract ended in May 2018	
Surroundings of the main works	Remedial pumping of bores and drains and monitoring	Remediation pumping and monitoring
U Trojice	Remedial pumping of bores and drains and monitoring	Continue of remediation pumping and monitoring until 8/2021
The main works – stage 1A	Extraction of contaminated soil, construction pumping of groundwater, siding renewal and restoration	Completion of restoration incl. road restoration
Nová Ves	Start of post-remedial monitoring	Post-remediation monitoring

Paramo Kolín

Location	Current status	Next stage
The works complex and sludge lagoons	Processing the update of the risk analysis and its discussion	Completion of remediation based on the assessment of the risk analysis' update

Spolana

Location	Current status	Next stage
Toxic waste landfill remediation	Remediation completed	Remediation completed
Remediation of objects contaminated with dioxins	Remediation completed	Remediation completed
Remediation of old amalgam electrolysis	Remediation completed	Post-remediation monitoring
	Remediation completed	Post-remediation monitoring
Ground water remediation at petrochemistry	Tender procedure cancelled, purpose update of the risk analysis	New decision, project
'Starý závod' (Old works) Ground water remediation	Feasibility study, purpose update of the risk analysis	New decision, project
Remediation of mercury contamination along the Labe riverbanks	Call for tender	Remediation of pollution

Summary of Financial Guarantees of the Ministry of Finance of the Czech Republic and Drawing of Funds by the Unipetrol Group as at 31 December 2019 (mil. CZK incl. VAT)

	Unipetrol RPA Litvínov	Unipetrol RPA Kralupy	Paramo Kolín	Paramo Pardubice	Benzina registered branch	Spolana	Group total
Financial guarantees of the MF of CR	6 012	4 244	1 907.0	1 241	1 323	8 159	**22 886**
Costs paid by the MF of CR in 2019	33	1	0.4	233	98	2	**368**
Costs paid by the MF of CR from the time of commencement of work	4 319	53	1 901.0	867	596	5 600	**13 336**
Expected costs of future works	2 522	787	6.0	2 361	916	2 402	**8 990**
Total (estimated) cost of remediation	**6 841**	**840**	**1 903.0**	**3 228**	**1 512**	**8 002**	**22 326**

17. Chemical safety

All of the Group's companies manufacture or use chemicals and mixtures in accordance with the applicable Chemical Act and Regulation (EC) No. 1907/2006 (REACH). They classify their marketed chemical products in accordance with Regulation (EC) No. 1272/2008 (CLP), and for those with hazardous properties, they process safety data sheets, which are then provided free of charge to all customers. In accordance with the REACH regulation, the safety data sheets of manufactured and purchased hazardous chemicals and mixtures are available to all employees at Unipetrol RPA via the intranet computer network – CASES database (system for managing and making available safety data sheets).

The Group concentrates on ongoing communication in the supply and demand chain in order to implement measures to protect employee health and the environment when hazardous chemicals are used directly or contained in mixtures. It monitors and applies any changes because of updated processes associated with registering and classifying chemical substances and updates these changes in its safety data sheets.

All of the Group's companies continuously monitor the handling of chemical substances and mixtures, from raw materials to finished products, and ensure compliance with applicable laws. The companies conduct internal and external testing and subsequently issue legal statements specifying the use of selected products, for example, when they are in contact with food or drinking water or used for medical purposes, etc. Through established customer services, the companies provide detailed information about the characteristics of the products in relation to their specific use.

The Group's companies are subject to international inspection by the UN Organization for the Prohibition of Chemical Weapons (OPCW), which promotes and verifies compliance with the Chemical Weapons Convention. All previous verifications carried out by government authorities and international inspections at the Group's companies have shown full observance of the Convention. In 2019, an inspection of the Ústí nad Labem Regional Inspectorate of CEI took place, focusing in the Unipetrol RPA facility on the fulfillment of conditions and obligations laid down by Act No. 350/2011 Coll., on Chemical Substances and Mixtures and EC Regulation 1907/2006 REACH and EC 1272/2008 CLP. The inspection did not find any violations of legislative regulations.

In accordance with the current legislation, PARAMO implemented the necessary registration of substances and isolated intermediates in due time. In the course of 2019, in cooperation with the CONCAWE consortium, all documentation of earlier registered substances and intermediates was completely updated under REACH, including a complete update of the "Lubricating oils" substance documentation, for which Paramo is the main registrant in the EU market. The company has been monitoring on a long-term basis the situation around the "restriction" of N-methyl 2-pyrrolidone (Restriction as per Annex XVII, REACH), which is used as an extractant in selective refining in CC Pardubice.

In August 2014, Spolana applied under Article 56 of Regulation (EC) No 1907/2006 REACH to the European Chemicals Agency (ECHA) for authorization to use trichlorethylene in the production of caprolactam. The authorization was granted and is valid until 21 April 2020. In order to ensure the use of trichlorethylene even after this date, an application for a review of the authorization was submitted in 2018 to the European Chemicals Agency under REACH. The decision is expected in the first half of 2020.

The Group's companies continuously comply with the REACH regulation requirement that specifies keeping the registration dossier up to date and must therefore ensure that their IUCLID software application, which processes the technical documentation for both registered and notified substances, complies with the latest version published on the ECHA website.

18. Occupational safety and health protection and fire protection

The Unipetrol Group considers occupational health and safety and fire protection one of the fundamental values of its policy.

In 2019, systematic steps were taken to apply a unified system of occupational health and safety management and fire protection at the Unipetrol Group. The result is a standardized approach to recently introduced processes and a plan to gradually unify the safety requirements applied in each company of the Group. An integral part of these steps is standardizing the requirements in the entire PKN Orlen Group. In 2019, a unified system of requirements was applied in relation to controlling risks during excavation work, investigating incidents, work at heights and in confined spaces.

The Group has established a unified system for monitoring selected performance indicators, defining the target values for 2019. Monitoring selected performance indicators in process safety continued (according to ANSI/API Recommended Practice 754, Process Safety Performance Indicators for the Refining and Petrochemical Industries). In 2019, only seven events were classified as a Tier 1 Process Safety Event (T-1 PSE) across the Group. The Unipetrol Group met target values, and the resulting values are listed in the table overview below.

In the process of the continuous improvement of security, the gradual implementation of the process was continued in 2019 LOTO (Lock-out / Tag-out - locking / marking - improvement of the system of safe preparation of equipment for repair / maintenance) on all Unipetrol production units. Last year, the implementation was completed at the Agro Unit, the planned implementation at the Kralupy Refinery Unit and the Water Management Section started with the planned completion in 2020; the planned implementation deadline at other units is by the end of 2021.

In 2019, wireless emergency signalling and communication units were deployed at the operations in Paramo to protect lone working employees.

In 2019, Spolana prepared the Register of Risk Identification and Assessment, the Database of Defects from External Audits and NO/PO Management and List of approved PPE. HAZOP - HAS, VCM and PVC analysis and implementation of PKN standards on VCM were performed. A new position of a "Technical Specialist of Metal Structures within OSH" was established, and a project to improve the condition of scaffolding and ladders in Chempark was implemented. The revitalization of selected social facilities continued in 2019.

Unipetrol Group	2019 Target	Resulting values
TRR: Number of accident with subsequent absence per million hours worked	1.8	0.9
PSER – Tier 1: Number of process events per million hours worked	1.0	0.45

19. Prevention and personal protective equipment

Prevention in occupational safety is ensured by employees qualified in risk assessment who conduct inspections at individual workplaces. Personal protective equipment is issued to company employees according to the identified hazards and the assessment of possible risks to life and health.

20. Quality of the work environment

According to work categories, work conditions at Unipetrol Group companies are regularly checked by measuring the environmental factors at work, especially the exposure of employees to noise, chemicals and dust.

21. Health care and prevention

Unipetrol Group companies have concluded agreements with physicians to provide occupational health services. Preventive medical examinations are conducted in compliance with the relevant laws and internal regulations.

22. Prevention of major accidents

Unipetrol has been paying close attention to the prevention of serious accidents for a long time. The basis for preventing accidents is the reliable and trouble-free operation of production facilities. The facilities are designed, operated, inspected and maintained in accordance with Czech law and internal regulations. Some of the regulations contain requirements beyond the law and are based on the best practices of the Group's companies.

Production plants are equipped with control systems that signal deviations from standard operating parameters. Some plants performing hazardous operations are equipped with automatic unit shutdown systems in the event that specified operating parameters are exceeded. Depending on the type of hazardous substances, plants are equipped with modern detection systems (detection of flames, smoke or release of hazardous substances) connected to signalling panels in their control rooms and the operation centres of the fire rescue service of the pertinent company. Stationary and semi-stationary extinguishing systems and fire monitors are installed at the production plants.

Regular internal audits of safety and accident risk assessment are conducted at all companies of the Group. Government technical supervisory bodies also conduct regular external audits and inspections. These bodies include, for example, Czech Environmental Inspectorate (ČIŽP), Regional Labour Inspectorate (OIP), Fire Rescue Brigade (HZS), Regional Hygiene Station (KHS), professional organizations of the CR, insurance brokers, insurers and foreign reinsurers. The recommendations and findings of these audits are incorporated into the respective implementation plans.

An important component of preventing serious accidents is the regular training and education of employees. The functionality of the serious accident prevention system is tested throughout the year through simulations of both emergency and crisis situations. The testing is conducted by plant operation employees in cooperation with its own and external intervention units in the form of emergency exercises at individual plants and comprehensive emergency exercises performed in cooperation with companies managing the industrial premises or businesses in their neighbourhood. The emergency exercises at the companies of the Unipetrol Group are carried out according to a plan. The exercises serve as practical training for employees in order to adequately respond to potential disasters, to verify the validity of emergency plans and procedures and to improve the knowledge of all participants. If an exercise reveals deficiencies, sufficient corrective measures are adopted from the exercise's evaluation, including deadlines for removing these deficiencies and designating personnel responsible for implementing measures.

Risk management of major accidents includes liability insurance in accordance with Act No. 224/2015 Coll., on the Prevention of Major Accidents, as amended.

The degree of safety at the Group's companies is significantly affected by new investments into production facilities. Potential operational risks are already addressed at the project stage through generally accepted methods of major accident risk assessment. Each new facility is always equipped with the most modern safety systems that meet the legal requirements of the Czech Republic and the European Union.

Production Group companies have their own fire rescue services, with top-level equipment and training that enables them to carry out highly specialized intervention in accidents associated with the release of hazardous substances. The Kralupy refinery unit employs the services of the Synthos Kralupy a.s. Fire Rescue Brigade.

Most manufacturing companies in the Group have a "B" classification, which means they are subject to the strictest controls stipulated in Act No. 224/2015 Coll., on the Prevention of Major Accidents, as amended, in the handling of selected hazardous chemical substances/mixtures.

Overview of the categorization of companies into groups according to Act No. 224/2015, as amended, and the condition identified in the Safety Report of 31st December 2018

Company	Object	Groups	Safety report
Unipetrol RPA	Litvínov locality	B	Updated Safety Report for Unipetrol RPA in Chempark Záluží was submitted for approval to the Regional Office of the Ústí nad Labem Region by 30 June 2019
	Kralupy locality	B	Updated Safety Report for Unipetrol RPA (Kralupy refinery unit) in the Chemical Production complex Kralupy was submitted for approval by the Regional Authority of Central Bohemian Region
	Benzina registered branch	B	Not subject to Act No. 224/2015 Coll. Reports on non-inclusion of Petrol Stations pursuant to the law were updated and submitted to the relevant Regional Authorities.
	Operating Department, Pardubice works, Semtín, Railway facility Pardubice	-	Approved by the decision of the Regional Authority of the Pardubice Region
Unipetrol Doprava	Operating Department, Pardubice works, Semtín, Semtín siding	B	Approved by the decision of the Regional Authority of the Pardubice Region
	Operating Department, Pardubice works, Semtín, Kolín siding	B	Not subject to Act No. 224/2015 Coll. Reports on non-inclusion submitted to the Regional Authority of the Central Bohemia Region
	Operating Department, Litvínov works siding	B	Approved by the decision of the Regional Authority of the Ústí Region
	Operating Department, Kralupy works, Neratovice, Kralupy railway facility	B	Approved by the decision of the Regional Authority of the Central Bohemia Region
	Operating Department, Kralupy railway facility, Neratovice railway facility	B	Approved by the decision of the Regional Authority of the Central Bohemia Region.
Paramo	Pardubice Cost Centre	B	Update in the approval proceedings of the Regional Authority of the Pardubice Region
	Kolín Cost Centre	-	Not subject to Act No. 224/2015 Coll., updated record on non-inclusion submitted to the Regional Authority submitted to the Regional Authority
Spolana	Spolana	B	Update approved by the decision of the Regional Authority of the Central Bohemia Region

23. Serious accidents

In 2019, an emergency occurred at one of the objects of the Unipetrol Group subject to Act No. 224/2015 Coll., on the Prevention of Major Accidents, and was subsequently categorized and reported to the Regional Authority of the Central Bohemia Region as a major accident. On 24 February 2019, an oil leak occurred from the Unipetrol Kralupy refinery desalination plant. The company has implemented measures to eliminate the occurrence of similar events in the future.

Other operational accidents that occurred during the year were contained by employees or through intervention by the company's fire brigades. These situations were adequately rectified, and measures were taken to prevent them from recurring. The effects of small operating accidents did not spread beyond the territories of the Group's companies.

24. Transportation Information and Accident System TRINS

The Transport Information and Accident System (TRINS) is a system that helps deal with accidents when hazardous substances are transported. TRINS was created by the Association of Chemical Industry of the Czech Republic under the Responsible Care programme in 1996 in an agreement between the Association and the Headquarters of the Fire and Rescue Service of the CR and has been incorporated as one of the support schemes in the Integrated Rescue System of the CR. TRINS is similar, for example, to the British CHEMSAFE system, or to the German TUIS, which served as models in creating TRINS. Similar systems have also been implemented in the Slovak Republic (DINS) and Hungary (VERIK) and have been operating for a long time in many other EU countries.

TRINS centres (in cooperation with the Fire and Rescue Services of the Czech Republic) provide urgent consultations concerning information about chemical substances and products, their safe transportation and storage, and practical experience with the handling and disposal of hazardous materials and emergency situations associated with their transport. TRINS centres also provide practical assistance in eliminating emergency situations, including removing subsequent environmental damage.

Currently, 22 regional TRINS centres are active in the Czech Republic. The centres are provided by 35 companies operating in the chemical industry. Unipetrol Group companies are founding members of TRINS. Unipetrol RPA also acts as the system's national coordination centre.

The names of Unipetrol Group companies (UNIPETROL, a.s., UNIPETROL RPA, s.r.o., UNIPETROL RPA – BENZINA, registered branch, UNIPETROL RPA – RAFINÉRIE, registered branch, UNIPETROL RPA – POLYMERE INSTITUTE BRNO, registered branch, UNIPETROL DOPRAVA, s.r.o., PARAMO, a.s., SPOLANA s.r.o.) are also given in this report in simplified form (Unipetrol, Unipetrol RPA, Benzina / Benzina registered branch, Polymer Institute Brno / PIB, Unipetrol Doprava, Paramo, Spolana).

List of abbreviations used:

ACHV – Chemical production site

APC – Adaptive Process Control

BAT – Best Avilable Techniques

BČOV – Biological wastewater treatment plant

BSK5 – Biochemical oxygen demand

BZ – Safety report

CASEC – Chemical Abstract Substances Evidence Center

CEFIC – The European Chemical Industry Council

CLP – Classification, Labelling and Packaging of substances and mixtures – Regulation of the European Parliament

CO2 – carbon dioxide

CONCAWE – CONservation of Clear Air and Water in Europe

ČIŽP (OI) – CEI – Czech Environmental Inspectorate (Regional Inspectorate)

ČOV – Wastewater Treatment Plant

ČS – Petrol station

DeSOx – technology for reducing sulphur oxide emissions

DeNOx – technology for reducing nitrogen oxide emissions

DS – Distribution warehouse

EIA – Environmental Impact Assessment

ECHA – European Chemicals Agency

EJ – Steam cracker

EnMS – Energy Management System

EMS – Environmental Management System

EU ETS – EU Emissions trading System

FCC – Fluid Catalytic Cracking Unit
FM – Facility Management
HOPV – Hydrogeological protection of groundwater
HRPO – Hydrogenation of gas oil
HS – Cost Centre
HSMS – Health and Safety Management System
HZS – Fire Rescue Brigade
CHSK – Chemical Oxygen Consumption
ICCA – International Council of Chemical Associations
IP – Integrated permit
IPPC – Integrated pollution Prevention and Control
ISCC – International Sustainability & Carbon Certification
KHS – Regional Hygiene Station
LPG – Liquefied Petroleum Gas
MESA – Management of Energy System Application
MEK – Methyl ethyl ketone
MF ČR – Ministry of Finance of the Czech Republic
NL – Suspended solids
NOx – Nitrogen oxides
OIP – Regional Labour Inspectorate
OZ – Registered branch
QMS –Quality Management System
PVC – Polyvinyl chloride
REACH – Registration, Evaluation and Authorization of Chemicals – EU regulation
RC – Responsible Care
RP – Paraffin solvent
SCHP ČR – Association of Chemical Industry of the Czech Republic
SO2 – Sulphur dioxide
SQAS – Safety and Quality Assessment System
TOE – Tonne of Oil Equivalent
TRINS – Transportation Information and Accident System
VISUAL MESA – name of IT application (Management of Energy System Application)
VOC – Volatile Organic Compoud
ZERO – software application for central records of inspections and accidents at Unipetrol RPA
ŽP – Environment