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Scope of Validity:

ORLEN Unipetrol RPA s.r.o. (excluding branches)



SAFETY REPORT OF ORLEN Unipetrol RPA s.r.o.. – Refinery Unit in Kralupy

Information to employees and other bodies present inside of the establishment under consent of the operator according to Article (2) § 15 Act No 224/2015 of Czech Act Coll.

Approved by:

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Effective since:

15. 03. 2021

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Určeno pouze pro vnitřní potřebu

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List of Changes

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Notice: change procedures follows Directive 821.

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1 Purpose

Safety Report (updated issue) was elaborated in the time period 2017 – 2019 by ORLEN Unipetrol RPA s.r.o. employees in cooperation with **Projekty PO, s.r.o., which elaborated Assessment of Major-Accident Hazards** of the establishment ORLEN Unipetrol RPA s.r.o. – Refinery Unit in Kralupy. **The Assessment of Major-Accident Hazards is an inseparable part of the Safety Report.** The Safety Report was updated in compliance with Act No 224/2015 of Czech Act Coll. (Major Hazard Accident Prevention Act). The update consisted particularly from elaboration of a new Assessment of Major-Accident Hazards, implementation of organizational changes within the company, implementation of changes within internal and external regulations relevant for the operator and in modification of the Human Factor Reliability Analysis in compliance with a Methodological Guideline No ZP24/2007 as issued by The Ministry of Environment of the Czech Republic, Department of Environmental Risks „Assessment of Human Factor Influence on an Establishment or Equipment with Regard to relevant Major-Hazards“. **The Safety Report has been approved on February 15, 2021 by decision of the Regional Authority of Central Bohemia Region.** The Assessment of Major-Accident Hazards was done according to the internationally recognized method (Purple Book). All information and data are presented within the Safety Report in the simplest way (pure texts, tables, schemes, pictures, maps, references to Annexes).

2 Scope of Validity

This document is valid for the following companies / branches:

- ORLEN Unipetrol RPA s.r.o. BENZINA, odštěpný závod
 POLYMER INSTITUTE BRNO, odštěpný závod

The document is binding to employees of ORLEN Unipetrol RPA s.r.o. – Refinery Unit in Kralupy and other bodies, who are present inside of the establishment under consent of the operator.

3 Terms, Definitions, Abbreviations

- MaH - Major-accident Hazard
SR - Safety Report

4 Summary

The Safety Report is split into seven parts, each part is focused on specific information required by Ministry of Environment Decree on Requisites of Safety Documents and Range of Information Provided to Expert Opinion Processor. **As the most important part of the Safety Report we could consider Part III – Assessment of Major-accident Hazards**, which selects Major-accident Hazards (MaH) within the company, analyses probability of major accidents on selected major-accident hazards, assesses their consequences and sets their acceptability with regard to the societal risk.

Part I of the Safety Report (hereinafter “SR”) sets basic information on the establishment, data on carried out activities within the establishment and employees.

Part II of the SR states description and informational data about our company. Part II focuses on division of the establishment, states list and quantity of dangerous substances present in the establishment/installations and details on used technologies (specific facts), and states activities and processes connected with major-accident hazards. Part II also specifies internally and externally provided services and information on the environment.

Part III of the SR describes major-accident hazards and their selection for Quantitative Risk Assessment (QRA). The selection was carried out according to the Guidelines for Quantitative Risk Assessment - CPR 18E (Purple Book). Used method takes into account characteristics and quantity of a dangerous substance present in an installation as well as the process conditions. Based on this framework Major-accident Hazards

were selected (individual installations/equipment) for the Quantitative Risk Assessment (QRA). **QRA was applied on 13 Major-accident Hazards** as set in **Chyba! Nenalezen zdroj odkazů..** Position of Major-accident Hazards on our premises indicates Illustration No 1.

Table 1 – Selected Major-accident Hazards

MaH Code	Installation	Process	Dangerous Substance
0401	RTC (rail tank car) loading	Loading/unloading	Gasoline
0710/ ST105, ST106, ST107, ST108	Tanks with floating roofs	storage	Crude Oil
1721/ ST103, ST104	Tanks with floating roofs	storage	Gasoline
8601/ ST507, ST505	Spherical tank	storage	Raffinate II, Rest C ₄ Fraction
8601/ ST503, ST504	Spherical tank	storage	Raffinate II
8601/ ST506, ST508, ST509	Spherical tank	storage	Propane-butane
8403/ T03, T04, T05	Tank	storage	Propylene
8403/T01, T02	Tank	storage	FCC C ₄ fraction
PK/30	Pipeline	Input from production	Raffinate II
PK/OP	Pipeline	Output to field burner	Off-gas
PK/007	Pipeline	Input from production	Propylene
2420	Pipeline to field burner	Pipeline to field burner	Hydrogen sulphide
Track No 200 and 203 at SKP	RTC loading	Loading/unloading	LPG, Propane, Butane, Raffinate, Propylene

Part III of the Safety Report describes procedures and outcomes concerning identification of the initial events, scenarios of major accidents, their causes and consequences and selection of the representative scenarios. Representative initial Events for the purposes of the Assessment of Major-accident Hazards were chosen in compliance with recommendation in expert literature CPR 18E (Purple Book).

Part III of the SR describes as well assessment of consequences concerning selected major accident scenarios including criteria used for numerical expression of such consequences. Aloha software in version 5.4.7 was used for modelling consequences including computational procedures set in expert literature.

From the calculations, which were **focused on assessment of consequences to life, consequences of blast wave and consequences of thermal radiation outside the company's premises is clear**, that the most hazardous areas concerning the selected major-accident hazards are:

Operating Set 8601/ST 506, ST 508, ST 509 – immediate release of Propane-butane from a big hole in a ball tank.

Operating Set 8403/T 03, T 04, T 05 – immediate release of liquefied Propylene from a big hole in a buried horizontal tank.

Consequences to livestock are not expected as livestock is not present at endangered areas (areas with expected consequences of major accidents). From the substances present on site the following are dangerous to environment: hydrogen sulphide, gasoline, crude oil, diesel, primary kerosene, jet fuel, light and heavy fuel oil. According to the carried out assessment of the major-accident hazards to environment is clear, with regard to construction solution, operational and emergency equipment, that they do not represent a serious hazard to environment.

From the calculations made within the Part III of the SR it is clear, that **selected Major-accident Hazards within ORLEN Unipetrol RPA s.r.o., which were analysed, exhibit acceptable societal risk.**

Part IV of the SR is focused on description of Major-accident Prevention rules, aims and policy. All these items form an inseparable part of within company implemented Integrated Management System (IMS), which is described more precisely by IMS Policy.

Part V of the SR describes Safety Management System. Duties and responsibilities of employees, head employees and set provisions concerning Safety Management System including Major-accident Prevention are set by:

- Job Descriptions according to the internal Directive 920 (Description of Job Functions),
- Work Rules, Rules of Organization and other organizational and management internal regulations, in contracts on services,
- operational documents (Operational Manuals, Handling Rules, Work Procedures) elaborated according to internal Directive 842 (Operational and Technical Regulations), Directive 845 (Handling Rules) and Directive 824 (Working, Laboratory and Calibration Procedures),
- emergency documents (emergency and evacuation plans, emergency instructions) according to the Directive 430 (Accident Prevention and Crisis Management) and Directive 430 (Crisis Management and Major-accident Prevention),
- in organizational and management standards concerning occupational health and safety according to the Directive 401 (Basic Regulation in the Field of Occupational Health and Safety and Safety of Technical Equipment), Fire Safety according to the Directive 403 (Fire Safety Basic Regulation) and major accident prevention according to the Directive 405 (Basic Regulation for the Field of Major Accident Prevention and Crisis Management).

Duties and responsibilities of contractor employees and visitors in those fields cited hereinbefore are set in Directive 402 (Safety Rules for Workers of other Organizations), which is available on intranet and company web presentation.

Part VI of the SR describes preventive safety measures focused on major accidents prevention and their consequence mitigation. Such measures include installed safety systems eliminating or mitigating the risk of occurrence of major accidents, own and under contract ensured protective and intervention resources designated to mitigate consequences of major accidents, including human resources and warning and alarm system.

5 Conclusion

Overall, from the point of view of the operator of an establishment with dangerous substances and with regard to content of the Safety Report, it could be stated, that implemented integrated management system (including Major Accident Prevention System and Safety Management System), carried out Assessment of Major-accident Hazards, set and implemented preventive measures, ensured intervention powers and devices are adequate to identified Major-accident Hazards and assessment of societal risk acceptability have significant influence on reduction of probability of major accidents occurrence and in case of their occurrence on mitigation of their consequences.

An inseparable part of Major Accident Prevention System forms each employee of the company. Each employee ensures accomplishment of the system by the following way. She/he matches qualification criteria, has appropriate competence and medical fitness, follows set valid procedures and obeys valid internal regulations, in case of indisposition or detected non-compliance notifies them, carries out work in a safe manner, insists on safe work performance from his/her colleagues and contractors.

Major Accident Prevention System accomplishment means employees protection as well as protection of the company including company's reputation!

Illustration No 1: Major-accident Hazards Position

