Emission inventory of selected NFR categories

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RESEARCH REPORTS (Czech only):

- HMs – POPs NFR 1A1b
- HMs_NFR 1A1c
- PAHs NFR 1B1b

Annotation:

HMs – POPs NFR 1A1b

HMs NFR 1A1c

PAHs NFR 1B1b

Petroleum refining (1A1b): HMs - POPs

There are 4 sources (refinery units) in this subcategory and for emission estimation is applied Tier 2 methodology (in the national database are available information about fuels consumption and their net calorific values and the facilities reports most of the emissions based on the direct measurements). In this subcategory are included all units with fuels consumption. The verification of accurate inclusion of each technology into the category 1A1b based on the analysis of relevant integrated pollution permission.

Paramo, corp. - HS Pardubice – boilers K1 and K2, fuel natural gas; furnace for warming up the asphalt tanks, it is recommended to reallocate the furnace for combustion of vented gases from the operation from the subcategory 1.B.2.c Venting and flaring to the category 1.B.1.b.

Paramo, corp. - HS Kolín – boilers nr. 8 and 9 (natural gas), furnace for redestilation of hydrogenate (natural gas), furnace for warming up the oil (combusting the low-sulphur heating oil), allocation into the categories is correct.

UNIPETROL RPA, Ltd. – Refinery Kralupy Unit – the analysis of the air pollution sources was carried out, it is recommended to reallocate diesel generation units (engines of the fire pumps) into the subcategory 1.A.4.a. For the rest of the sources is provided a suggestion of emission calculations for PAH and heavy metals (for natural gas country specific emission factors CHMI), for refinery gas combustion emission factor from EIG 2019 for 1.A.1.b, Tier 1. It is apparent from the results that calculated emissions from NG are lower about order of magnitude from the emissions from refinery gas which means these emissions are negligible.

UNIPETROL RPA, Ltd. – Refinery Litvínov Unit – the analysis of the air pollution sources was carried out. For the emission inventory it is recommended to carry out selection of those, which are representing direct heating and where the consumption of fuels is reported. Consequently it is not possible to include them elsewhere (for instance the Claus unit is allocated in line with EIG in NRF 1.B.2.a.i.v). Emissions are estimated using the same approach as in the refinery Litvínov (for natural gas country specific emission factor CHMI, for refinery gas default EF).

Finally it is recommended for future to keep the set up approach updated following suggested revisions. Focus also on the emission sources which are not reported under Monitoring of air pollution sources (flaring) and in cooperation with sources operators evaluate emissions of TK and POPs.

Fugitive emissions from solid fuels: solid fuel transformation (1.B.1.b): PAHs

Coke oven (door leakage and extinction); Solid smokeless fuel

The subcategory covers only fugitive emissions from coke oven production and production of solid smokeless fuel. The other emissions falls under 1.A.1.c Manufacture of solid fuels and other energy industries.

The solid smokeless fuel in not produced in the Czech Republic. In case the coke is used, it is metallurgical coke produced in coke plants in Ostrava, or imported coke.

Description of the coke production from the hard coal mined in Ostrava-Karviná coal-field is provided. Consequently the released pollutants are specified.

Further the emission calculation is carried out using the default emission factors (using Tier 1), and comparing with emissions, which are up to now reported under EMEP. It is apparent from the graph, that around 2000 the emissions stopped decreasing. It implies the end of the introduction of the emission reductions technologies. Since 2000 there is apparent only slight decrease which is following the production decline. Level of PAH emissions after 2000 (reported under EMEP) was compared with estimated values for each cogeneration unit based on the minimum level of default emissions factor, which showed satisfactory similar values.

From this reasons it is finally suggested to apply the approach used in the same manner as in the last 10 years, which actually indicates Tier 3 methodology.

Manufacture of solid fuels and other energy industries (1.A.1.c): HMs

In the Czech Republic are currently in operation 3 sources for manufacturing of coal coke and 1 source of integrated manufacturing of brown coal (lignite). This integrated source has been covering production on briquettes until 2011 and production of the gas works gas and since 2012 till 2020 only the gas works gas production.

The combustion sources reported under this category includes warming up of the coke oven batteries and sources related to the preparation of the coal for briquettes production and gas works gas (drying and grinding of coal) and emissions from gasification of the coal. For the PAH emission calculation the reported values by the operators under the Monitoring of air pollution sources were compared with emissions calculated using country specific emission factors (drying, grinding and briquetting on the brown coal) or using default emission factors (coke production autoproducer CHP). Due to the fact, that the results were quite in line with the reported data, it was recommended to continue to use currently applied approach, meaning to report based on the reported data under the Monitoring of air pollution sources. After 2020 there will be only coke production occurring in the Czech Republic.