E-PRTR and LCP integrated reporting – Post-Submission Review

Manual of Procedure

Version 0 March 2023

European Environment Agency

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Acknowledgments

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Version control

Version number	Date	Description
0	March 2023	Revised version. New checks and updated methodology

Contents

Introduction

Under the European Commission initiative to streamline the reporting of emissions for industrial entities, thematic information for large combustion plants (LCPs) required under the Industrial Emissions Directive (IED) [1] and facilities under the European Pollutant Release and Transfer Register (E-PRTR) Regulation (EC) No 166/2006[2] is now to be reported in an integrated dataflow. This results in a coherent and consistent database of emissions data from LCP installation parts and E-PRTR facilities integrated with data reported under the EU Registry.

The purpose of this manual Is to detail the logic and proposed implementation of a range of post-submission quality assurance/quality control (QA/QC) checks, which will be performed by expert reviewers on successfully reported thematic data. These checks go beyond the automated QA/QC checks already included in the central data repository (CDR), the reporting platform used for the E-PRTR & LCP data reporting, which are described in the separate report on Quality assurance logic–- E-PRTR & LCP reporting.

The checks proposed within this document are split into three groups:

1. **EPRTR checks** – These checks are focused on E-PRTR thematic data, i.e. reporting of pollutant releases, pollutant transfers and off-site waste transfers. They aim at checking the presence of potential outliers not detected by the automatic QA and the consistency of the data.
2. **LCP checks**: these checks are focused on LCP thematic data, i.e. reporting of emissions and energy input from Large Combustion Plants as well as data on operating hours. They aim at checking the presence of potential outliers not detected by the automatic QA and the coherence of data reported from the countries
3. **Activity-related checks** – This group analyses the consistency of the reported data with regard to the activity. Data are reviewed in comparison to expected ranges of values or external databases linked to the activity. These checks are currently under review and therefore suspended.

Checks within each group are detailed in the sections below.

This document may be amended over time in case additional post-submission checks become necessary. Future reporting rounds may, for example, incorporate additional temporal checks as further data becomes available. Checks currently outlined in this document may also help to complement and refine the automated checks on CDR.

The findings of each check will be communicated to the reporting countries via a feedback file called *findings log*.

1 E-PRTR checks

C.EPRTR.1 – Identification of potential pollutant releases/transfer and off-site waste transfer at facility level in comparison with the previous reporting year

Rationale:

Historical data for pollutant release/transfer and waste transfer from the previous year can provide a benchmark against which to compared newly reported data. This check will reference the previous years' data to identify large changes in a ProductionFacility's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. totalWasteQuantityTNE and totalPollutantQuantityKg attributes, for all three OffsiteWasteTransfers, OffsitePollutantTransfers and PollutantReleases feature types, will be compared against data from the previous year where available – this check will not be performed on new facilities.

OffsiteWasteTransfers, OffsitePollutantTransfers, PollutantReleases and associated ProductionFacilities

will be flagged where the reported value exceeds the threshold limits below:

a) PollutantReleases: 2 times higher than the previous year
b) PollutantReleases: >10 times lower than the previous year
c) PollutantTransfer: 2 times higher than the previous year
d) PollutantTransfer: >10 times lower than the previous year
e) OffSiteWasteTransfer: 10 times higher than the previous year
f) OffSiteWasteTransfer: >10 times lower than the previous year

This comparison is specific to the pollutant and associated mediumCode for PollutantReleases, specific to pollutants for OffsitePollutantTransfers (i.e. comparisons are made for emissions to air/water/land of the same pollutant in the year reported and the previous year). On the other hand, the check is performed on aggregates OffsiteWasteTransfers by wasteClassification. The defined thresholds above are subject to review following the testing phases of the integrated LCP-EPRTR thematic data input.

Follow up action:

If the conditions above are not met for a given EPRTR facility for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_1_a_b_PollutantReleases, qaqc.C_EPRTR_1_c_d_PollutantTransfer and qaqc.C_EPRTR_1_e_f_OffSiteWaste. The functions requires as an input variable the reporting year selected and they use the following functions as data source qaqc.EPRTR_FacilityReleases, qaqc.EPRTR_FacilityTransfers and qaqc.EPRTR_FacilityWasteTransfers.

C.EPRTR.2 – Identification of potential pollutant releases/transfer and off-site waste transfer at facility level in comparison with the historical data reported

Rationale:

Historical data for pollutant release/transfer and waste transfer from previous years can provide a benchmark against which to compare newly reported data to identify potential reporting errors. This check will reference the average information reported at facility level from 2017 onwards to identify large changes in a ProductionFacility's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. totalWasteQuantityTNE and totalPollutantQuantityKg attributes, for OffsiteWasteTransfers, PollutantTransfers and PollutantReleases feature types, will be compared against the average of calculated from 2017 to the previous year data where available – this check will not be performed on new facilities.

OffsiteWasteTransfers, PollutantTransfers and PollutantReleases and associated ProductionFacilities

will be flagged where the reported value exceeds the threshold limits below:

a) PollutantReleases: either 2 times higher or less than 50% of the average from 2017 to the previous reporting year
b) PollutantTransfer: either 2 times higher or less than 50% of the average from 2017 to the previous reporting year
c) OffSiteWasteTransfer: either 10 times higher or less than 50% of the average from 2017 to the previous reporting year

This comparison is specific to the pollutant and associated mediumCode for PollutantReleases, specific to pollutants for OffsitePollutantTransfers but aggregates OffsiteWasteTransfers by wasteClassification. The defined thresholds above are subject to review following the testing phases of the integrated LCP-EPRTR thematic data input.

Follow up action:

If the conditions above are not met for a given EPRTR facility installation for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_2_a_Releasese_changes, qaqc.C_EPRTR_2_b_Transfers_changes and qaqc.C_EPRTR_3_c_WasteTransfers_changes. The functions requires as an input variable the reporting year selected and they use the following functions as data source qaqc.EPRTR_FacilityReleases, qaqc.EPRTR_FacilityTransfers and qaqc.EPRTR_FacilityWasteTransfers.

C.EPRTR.3 – Identification of potential continuity issues at facility level in reported pollutant releases and off-site waste transfers

Rationale:

Historical data for pollutant release/transfer and waste transfer from the previous year can provide a benchmark against which reported data can be compared to identify potential reporting errors. This check will reference the information reported from 2017 onwards withing the EPRTR and identify potential missing facilities according to the thematic information reported at facility level.

Procedure:

The EPRTR_LCP database will be evaluated. totalWasteQuantityTNE and totalPollutantQuantityKg attributes, for OffsiteWasteTransfers and PollutantReleases feature types, will be investigated by comparing the average emissions reported from 2017 to the current reporting year to the reporting threshold. The number of data points reported since 2017 will be taken in consideration.

PollutantReleases and OffsiteWasteTransfers and associated ProductionFacilities will be flagged where the reported value exceeds the conditions described below.

Pollutant releases

A facility will be flagged as potentially missing a reporting value if it has **not** reported any pollutant release of a given pollutant in the assessed reporting year but has reported significant average emissions between 2017 and the reporting year assessed. The level of priority of this check is evaluated considering how high these average releases are compared to the pollutant threshold.

High priority:

a) No emissions in the reporting year but average emissions (since 2017) ≥100 times higher than the reporting threshold.
b) No emissions in the reporting year but average emissions (since 2017) between 10 and 99 times higher than the reporting threshold.

Low Priority:

c) No emissions in the reporting year but average emissions between 2 and 9 times higher than the reporting threshold.

Waste transfers:

A similar assessment will be undertaken and a value will be considered missing under the following conditions

High Priority

d) No waste transfers reported in the reporting year but average transfers (since 2017) ≥100 times higher than the reporting threshold.

This comparison is specific to the pollutant and associated mediumCode for PollutantReleases, and aggregates OffsiteWasteTransfers by wasteClassification. The defined criteria above are subject to review following interaction with the reporting countries

Follow up action:

If the conditions above are not met for a given EPRTR facility installation for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_3_Releasese_continuity and qaqc.C_EPRTR_3d_WasteTransfer_continuity. The functions requires as an input variable the reporting year selected and they use the following functions as data source qaqc.EPRTR_FacilityReleases and qaqc.EPRTR_FacilityWasteTransfers.

C.EPRTR.4 – Facility Pollutant releases and LCP emissions to air feasibility

This check is an implementation of automatic QA C6.1 and C6.2. The automated checks are set to become a blocker as from reporting year = 2022. The aim of this check is to provide a list of potential blocker to reporting countries.

Rationale:

The relationships between reported emissions to air from ProductionInstallationParts and ProductionFacilities can be used to identify potential reporting errors. SO_2 and NO_x emissions reported for an individual LCP installation part or the sum of emission from the underlying LCPs should not be higher than the emissions of the equivalent pollutant release reported to air for the parent E-PRTR facility, unless they are below the threshold for E-PRTR reporting. As well, in case of SO_2 and NO_x emissions reported for an individual LCP installation part above the E-PRTR reporting threshold, PollutantReleases from a facility can not be zero.

Similarly, dust emissions reported for an individual LCP installation part or the sum of the emissions from all the underlying LCPs should not be more than twice as high as PM_{10} reported to air for the parent E-PRTR facility. It must be noted that the pollutant reported under E-PRTR Facility reporting is PM_{10}, a subset of total dust emissions. One aspect that must be considered is that there may be multiple sources of PM10 within a single E-PRTR facility other than from the LCP installation

part stack. To allow for this, a conservative estimate that dust emissions are unlikely to be more than twice as much as PM10 emissions is employed.

A check is required to ensure these values are coherent.

Procedure:

The EPRTR_LCP and EURegistry database will be evaluated. LCP installation parts and E-PRTR facilities that are associated in the EU Registry can be compared.

Individual pollutant quantities for SO_2 or NO_x reported by an LCP InstallationPart (EmissionsToAir feature type), should be lower than the respective reported values for SOx and NO_2 from the associated parent ProductionFacility. Reported dust emission quantities for an LCP installation part should be lower than 2 times the reported PM_{10} emissions for the parent E-PRTR facility .

In case emission from an LCP InstallationPart are reported above the E-PRTR reporting threshold

a) A facility is flagged in case NOx LCP emissions are above 100.000kg and higher than 10% of the NOx PollutantReleases reported at facility level
b) A facility is flagged in case SO2 LCP emissions are above 150.000kg and higher than 10% of the SOx PollutantReleases reported at facility level
c) A facility is flagged in case DUST LCP emissions are above 50.000kg and higher than 2 times the PM10 PollutantReleases reported at facility level
d) A facility is flagged in case the sum of NOx emissions from underlying LCPs are above 100.000kg and higher than 10% of the NOx PollutantReleases reported at facility level
e) A facility is flagged in case the sum of SO2 emissions from underlying LCPs are above 150.000kg and higher than 10% of the SOx PollutantReleases reported at facility level
f) A facility is flagged in case the sum of DUST emissions from underlying LCPs are above 50.000kg and higher than 2 times the PM10 PollutantReleases reported at facility level

The defined criteria above are subject to review following interaction with the reporting countries

Follow up action:

If the conditions above are not met for a given combination of EPRTR facility and LCP installationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_4_Facility_LCP_emissions_coherence. The function requires as an input variable the reporting year selected and use the following function as data source: qaqc.Support_Facility_LCP_EmissionComparison.

C.EPRTR.5 – Identification of potential outliers from new reported ProductionFacilities

Rationale:

Historical data for pollutant release from the previous year might be not enough as benchmark against which reported data can be compared to identify potential reporting errors. This check will use the information reported in the last reporting year in order to find potential outlier from entities which are reported for the first time in the database.

Procedure:

The EPRTR_LCP database will be evaluated. totalPollutantQuantityKg attributes, for PollutantReleases feature types, will be investigated by assessing the contribution of a newly reported facility to the total pollutant releases in its country in the reporting year.

PollutantReleases and associated ProductionFacilities will be flagged where the reported value exceeds the condition described below:

a) A new *functional* facility cover more than 10% of the total releases in the reporting year
b) A new *non functional* facility cover more than 10% of the total releases in the reporting year

This comparison is specific to the pollutant and associated mediumCode for PollutantReleases, and aggregates OffsiteWasteTransfers by wasteClassification. The defined criteria above are subject to review following interaction with the reporting countries

Follow up action:

If the conditions above are not met for a given EPRTR facility for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_3_Releasese_continuity and qaqc.C_EPRTR_5_Reporting_of_new_releases. The functions requires as an input variable the reporting year selected and they use the following functions as data source qaqc.EPRTR_FacilityReleases.

2 LCP checks

C.LCP.1 – Identification of potential EmissionToAir outlier at installation part level in comparison with the previous reporting year

Rationale:

Historical data for emission to air from the previous year can provide a benchmark against which reported data can be compared to identify potential reporting errors. This check will reference the previous years' data to identify large changes in a ProductionInstallationPart's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. totalPollutantQuantityTNE attribute for EmissionToAir feature types, will be compared against previous year data where available – this check will not be performed on new facilities.

EmissionsToAir and associated ProductionInstallationPart will be flagged where the reported value exceeds the threshold limits below:

a) EmissionToAir: 2 times higher than the previous year
b) EmissionToAir: >10 times lower than the previous year

This comparison is specific to the pollutant. The defined thresholds above are subject to review additional interaction with the reporting countries.

Follow up action:

If the conditions above are not met for a given LCP InstallationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_LCP_1_a_b_Emissions. It requires as an input variable the reporting year selected and it use the following function as data source qaqc.LCP_InstallationPart_Emissions.

C.LCP.2 – Identification of potential EnergyInput outlier at installation part level in comparison with the previous reporting year

Rationale:

Historical data for energy input from the previous year can provide a benchmark against which reported data can be compared to identify potential reporting errors. This check will reference the previous years' data to identify large changes in a ProductionInstallationPart's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. energyinputTJ attribute for EnergyInput feature types, will be compared against previous year data where available – this check will not be performed on new facilities.

EnergyInput and associated ProductionInstallationPart will be flagged where the reported value exceeds the threshold limits below:

a) EnergyInput: 2 times higher than the previous year
b) EnergyInput: >10 times lower than the previous year

This comparison is specific to the InstallationPart and evaluate the total energyInput of a given LCP. The defined thresholds above are subject to review by following additional interaction with the reporting countries.

Follow up action:

If the conditions above are not met for a given LCP InstallationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_LCP_2_a_b_Energy. It requires as an input variable the reporting year selected and it use the following function as data source qaqc.LCP_InstallationPart_Energy.

C.LCP.3 – Identification of potential outlier and coherence at installation part level of reported operatingHours

Rationale:

Historical data for energy input and operatingHours from the previous year can provide a benchmark against which reported data can be compared to identify potential reporting errors. This check will reference the previous years' data to identify large changes and potential inconsistent in a ProductionInstallationPart's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. energyinputTJ and numberOfOperatingHours attribute for EnergyInput and ProductionInstallationPartReport feature types, will be compared against both historical data reported (since 2017) and within the reporting.

EnergyInput, numberOfOperatingHours and associated ProductionInstallationPart will be flagged where the reported values meet the criteria described below:

a) OperatingHours changes more than 50% from the average values calculated from 2017 to the previous reporting year;
b) OperatingHours are reported between 0 and 1 and the total energy input of the LCP is above 0;
c) OperatingHours are reported above the 30% of the year and LCP total energy input is equal to 0.

This comparison is specific to the InstallationPart. The defined thresholds above are subject to review following additional interaction with the reporting countries.

Follow up action:

If the conditions above are not met for a given LCP InstallationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_LCP_3_OperatingHours. It requires as an input variable the reporting year selected and it use the following function as data source qaqc.LCP_InstallationPart_Energy.

C.LCP.4 – Identification of potential outlier and coherence at installation part level of reported energyInput

Rationale:

Historical data for energy input from the previous year can provide a benchmark against which reported data can be compared to identify potential reporting errors. This check will reference the historical data identify large changes and potential inconsistent in a ProductionInstallationPart's reported values.

Procedure:

The EPRTR_LCP database will be evaluated. energyinputTJ attribute for EnergyInput and ProductionInstallationPartReport feature types, will be compared against both historical data reported (since 2017) and within the reporting. In addition, the TotalRatedThermalInput attribute reported in the EURegistry is taken into account.

The LCP InstallationPart's total EnergyInput from TJ per year is converted to MW by multiplying the aggregated energyInputTJ value by the conversion factor, 0.0317:

Aggregated energy input (TJ/yr)*0.0317 = Aggregated energy input (MW)

EnergyInput, TotalRatedThermalInput and associated ProductionInstallationPart will be flagged where the reported values meet the criteria described below:

a) The Aggregated Energy Input (MW) is higher than 15% of the reported TotalRatedThermalInput
b) The LCP total energy input changed more than 50% compared to its average energy input from 2017 to the previous reporting year.

This comparison is specific to the InstallationPart. The defined thresholds above are subject to review following additional interaction with the reporting countries.

Follow up action:

If the conditions above are not met for a given LCP InstallationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_LCP_4_EnergyInput. It requires as an input variable the reporting year selected and it use the following function as data source qaqc.LCP_InstallationPart_Energy.

C.LCP.5 – Identification of potential outliers from new reported LCP ProductionInstallationPart

Rationale:

Historical data for both emission to air and energy input from the previous year might be not enough as benchmark against which reported data can be compared to identify potential reporting errors. This check will use the information reported in the latest reporting year in order to find potential outlier from entities which are reported for the first time in the database.

Procedure:

The EPRTR_LCP database will be evaluated. totalPollutantQuantityTNE and fuelInputTJ attributes, for EmissionToAir and EnergyInput feature types, will be investigated by assessing the contribution of a newly reported facility to the total emission and energy input in its country in the reporting year.

EmissionToAir, EnergyInput and associated ProductionInstallationPart will be flagged where the reported value exceeds the condition described below:

a) A new *functional* LCP InstallationPart cover more than 20% of the total emissions in the reporting year
b) A new *non functional* LCP InstallationPart cover more than 20% of the total emissions in the reporting year
c) A *new functional* LCP InstallationPart cover more than 20% of the total energyInput in the reporting year
d) A new *non functional* LCP InstallationPart cover more than 20% of the total energyInput in the reporting year

This comparison is specific to the pollutant EmissionToAir and to the InstallationPArt for the EnergyInput. The defined criteria above are subject to review following interaction with the reporting countries

Follow up action:

If the conditions above are not met for a given LCP InstallationPart for a given reporting year, the finding is flagged to the reporting countries in the findingLog file.

(EEA Internal) Calculation of the findings:

The above mentioned findings shared with reporting countries are calculated and stored in the EEA EPRTR_LCP SQL database in three different functions: qaqc.C_EPRTR_3_Releasese_continuity and qaqc.C_LCP_5_a_b_Reporting_of_new_LCP_emissions and qaqc.C_LCP_5_c_d_Reporting_of_new_LCP EnergyInput. The functions requires as an input variable the reporting year selected and they use the following functions as data source qaqc.LCP_InstallationPart_Emissions and qaqc.LCP_InstallationPart_EnergyInput.

3 Activity related checks

The methodology of these check is currently under revision. New checks are under development and therefore there are no findings in the communication share with reporting countries in Q1 2023.

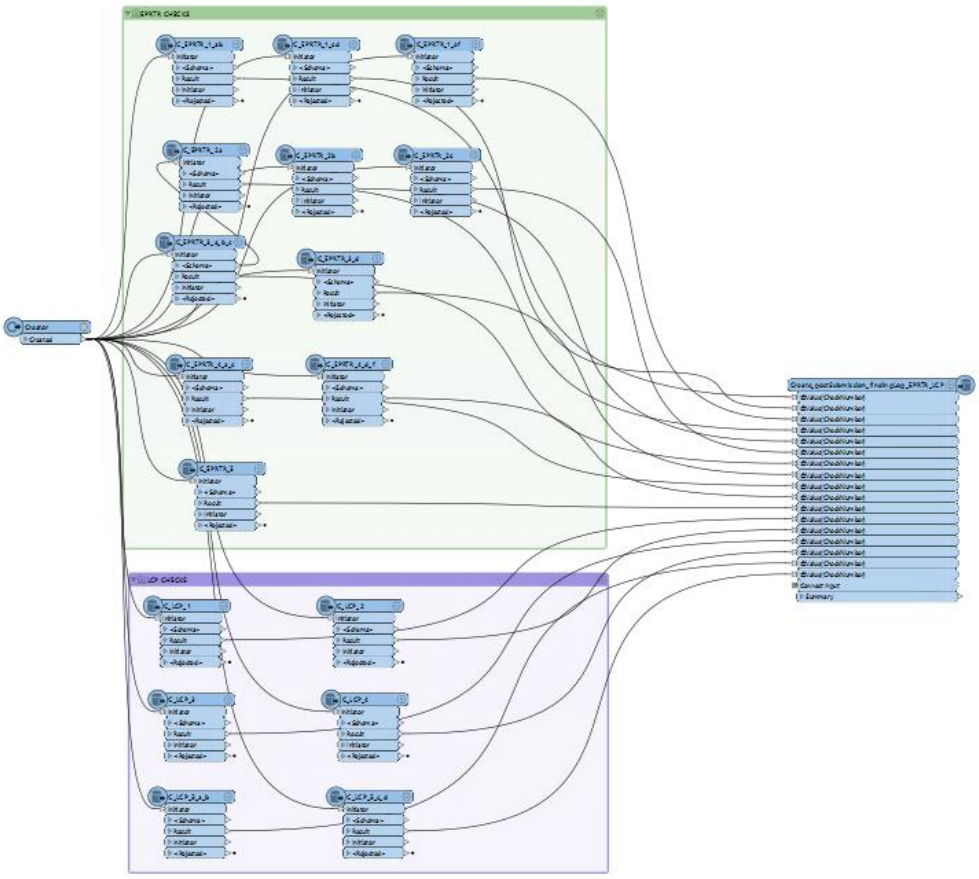
4 General rule

To avoid repeated requests, replies from countries retrieved from the findings logs of the previous years will be taken into account considering expert judgement. If issues have already been identified and justified in previous reporting years, EEA reviewers will either not flag them for some well-known cases or ask Member states to confirm or update their comments.

5 Findings Log

Findings of the checks detailed within this document will be communicated via a 'Findings Log', sent to the reporting countries via an email to a designated representative or access through the EIONET. Reporting countries should respond to each individual finding and return/re-upload an edited version of the findings log. More detail on how individuals should use the Findings Log is provided below.

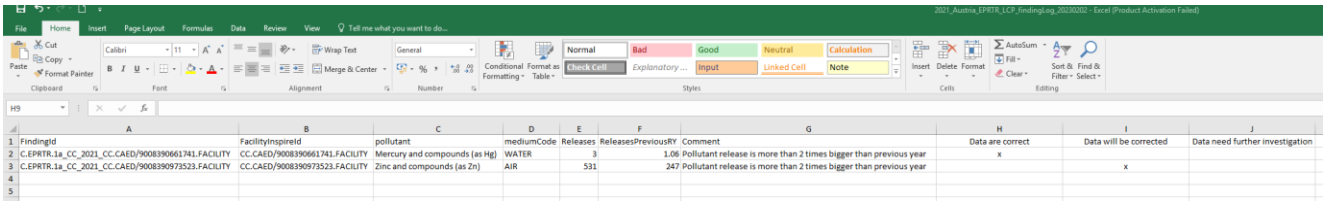
The Finding Log file is produced by the EEA through the FME Workspace "EPRTR_LCP - Post Submission checks.fmw" stored in the EEA Common Work Space (CWS). The workspace returns a country specific MS Excel file by harvesting the output of the SQL functions listed above in the check description. It requires two parameters as input: the relevant reporting year and the current date.



The Findings Log is an Excel file consisting of "Check specific" tabs where all the relevant finding are listed. Each Finding is identified through a "FindingId" which reflect the reporting country, the reporting year, the check number, and the relevant entity investigated (e.g.: C.EPRTR.1a_BE_2021_BE.WA/027010000.FACILITY).

Each findings present the relevant entity involved through the Inspire ID, the field which have been investigated (e.g.: date of granting, coordinate etc…) and a comment about the reason of the finding.

Three empty column are provided: i) Data are correct; ii) Data will be corrected and iii) Data need further investigation. **Data reporter should provide feedback by flagging with an "X" the relevant column as in the picture below.**



	A	B	C	D	E	F	G	H	I	J
1	FindingId	FacilityInspireId	pollutant	mediumCode	Releases	ReleasesPreviousRY	Comment	Data are correct	Data will be corrected	Data need further investigation
2	C.EPRTR.1a_CC_2021_CC.CAED/9008390661741.FACILITY	CC.CAED/9008390661741.FACILITY	Mercury and compounds (as Hg)	WATER	3	1.06	Pollutant release is more than 2 times bigger than previous year	x		
3	C.EPRTR.1a_CC_2021_CC.CAED/9008390973523.FACILITY	CC.CAED/9008390973523.FACILITY	Zinc and compounds (as Zn)	AIR	531	247	Pollutant release is more than 2 times bigger than previous year		x	
4										
5										

The commented findingLog should be either uploaded to the EIONET Project folder or send via email to the Industry Helpdesk (industry.helpdesk@eea.europa.eu).