

Data pathway analysis - identifying risks in LCI



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Data pathway

- ▶ A sequence of collation, calculation, manipulation activities linking measured or recorded data to LCA results
 - ▶ variable length
 - ▶ more robust and weaker steps:
 - ▶ calculation vs direct measurement
 - ▶ automatic transfer vs. manual transcription
- ▶ Recognised in data quality assessments
- ▶ Potentially useful to guide review activities

Emissions verification

Analysis of data flow pathway

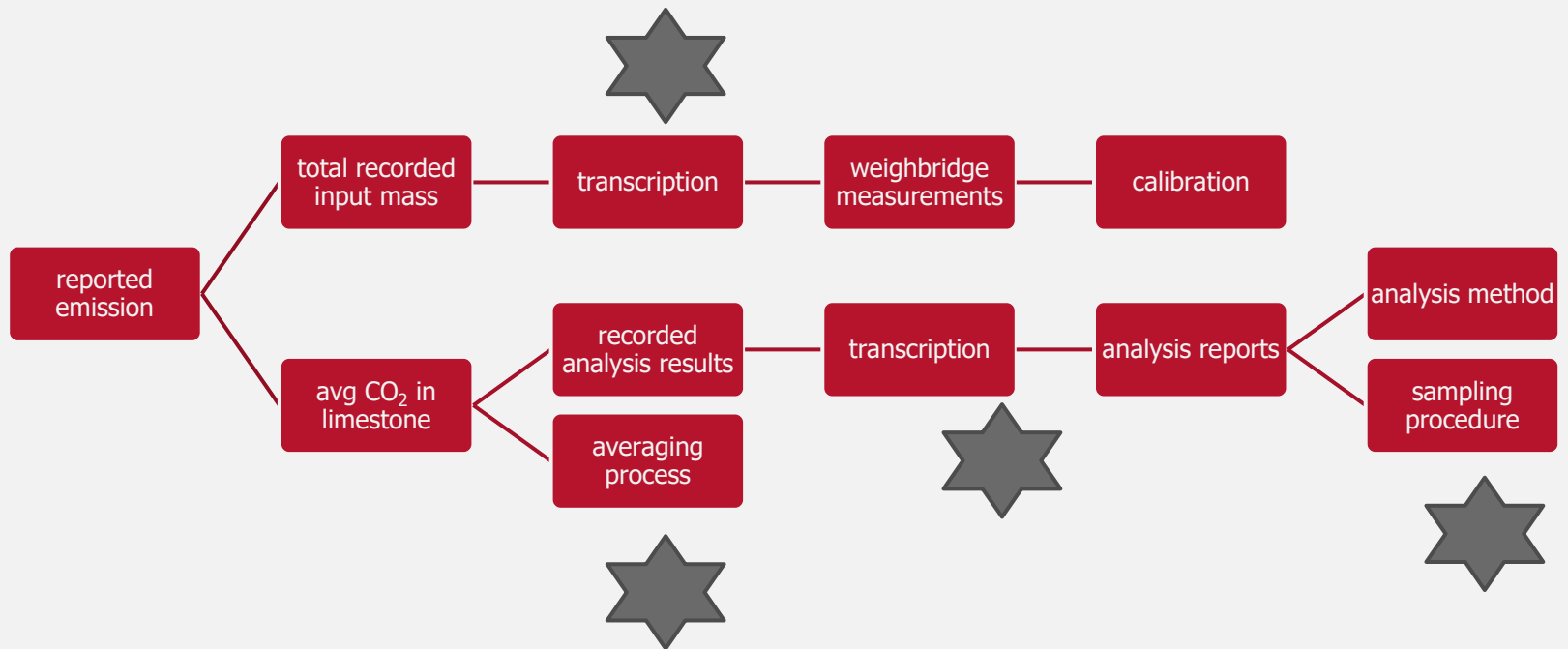


Identification of high risk steps



Focus points for audit checks

CO₂ from calcining limestone



Plenty of scope for error!

What about LCA?

- ▶ LCA unit process data
 - ▶ more data sources
 - ▶ more diverse data pathways
- ▶ For example:
 - ▶ air emissions from regulatory submissions:
 - ▶ spot sample analysis x measured spot flow rate (analysis \leq 1/yr)
 - ▶ x annual run hours (estimated / recorded)
 - ▶ water emissions from regulatory submissions:
 - ▶ spot sample analysis (analysis 1/month)
 - ▶ x total volume (continuous measurement or % input volume)
 - ▶ material & energy use from purchase records

Weak steps on the LCI data flow pathway?

- ▶ Some examples:
 - ▶ previous year total flows / run hours applied to current year
 - ▶ unnoticed mid-year change in energy billing units
 - ▶ outdated air emission analysis used with changed material inputs
 - ▶ failure to convert units from purchase records to consistent basis (kg, g & linear m all reported as kg, etc.)
 - ▶ transcription errors

- ▶ QC can try to control these risks

What to do in practice?

- ▶ Data audit “back to source” is resource-intensive
 - ▶ not practicable for 100% of data
- ▶ Selective application:
 - ▶ review data sources
 - ▶ assess nature / length of data flow pathway: how robust?
 - ▶ focus on *material* contributions from LCIA
 - ▶ use alongside other checks:
 - ▶ overall mass balance
 - ▶ flow balance
 - ▶ benchmarks
- ▶ How did this data point reach my study?

In summary

- ▶ The data flow pathway links the inputs and outputs of LCA
- ▶ Checking activities along this pathway is part of QC
- ▶ Risk focus makes QC more efficient
- ▶ Analysing the data pathway helps identify risks
 - ▶ primary data and generic data
- ▶ Complementary to
 - ▶ data quality assessment
 - ▶ contribution analysis

Thank you
Questions?



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