

Critical Review of an LCA

**Specialty
compounds and polymers
for healthcare**



Executive summary

This is a summary of the LCA critical review report no 93 dated 2017-04-13, performed by Extracon AB for Region Jämtland Härjedalen, as part of the LIFE project. For more details, see the full version of the report.

The review has been done according to the procedures in ISO14040:2006 and ISO14044:2006, the activity was a documentation review. Review criteria description:

- Relevant and realistic description of the outcome
- The accuracy in basic models for the dominant parts of the life cycle (sample)
- Relevance to the assumptions that are made and the modifications of the models that are made.
- Relevance and representation of the data sources impacting in the most significant parts of the final result.
- Selected characterization

The LCA result in the report has been judged relevant and where uncertainties exist, there is transparency for the reader, the main comments for adjustments has been of cosmetic character for easier understanding of the LCA study and its result but has not changed the final outcome of the study.



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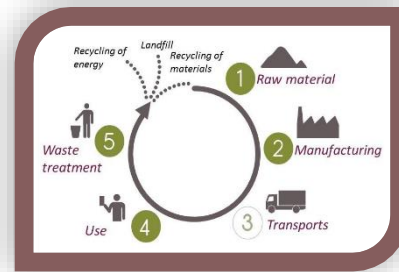
About Critical review of an LCA

According to ISO14040:2006 and chapter 7 about critical review, following is said (chosen parts):

Critical review is a process to verify whether an LCA has met the requirements for methodology, data, interpretation and reporting and whether it is consistent with the principles. A critical review can neither verify nor validate the goals that are chosen for an LCA by the study commissioner, nor the ways in which the LCA results are used.

The use of LCA results to support comparative assertions raises special concerns and requires critical review, since this application is likely to affect interested parties that are external to the LCA.

However, the fact that a critical review has been conducted should in no way imply an endorsement of any comparative assertion that is based on an LCA study.



In the LCA report “PVCFREEBLOODBAG - LIFE CYCLE ASSESSMENT” is stated in chapter 3.2.10:

- A critical review is necessary to allow for external communication and comparison with results from other studies. This is a public study with comparative assertions. The LCA expert Göran Brohammer, LCA-expert at Extracon AB, is engaged to perform the critical review.

Accordingly, that’s the reason behind this actual critical review and this report.

The project and the LCA under review

The critical review considers the LCA (Life cycle assessment) results presented in the report “PVCFREEBLOODBAG - LIFE CYCLE ASSESSMENT” dated 13/4 – 2017. The report has been prepared by the company – Miljögiraff:

Miljögiraff

Södra Larmgatan 6

411 16 Gothenburg

<http://www.miljogiraff.se>

And the project has been done for Region Jämtland Härjedalen .

The outcome of this critical review is this report, and the user of this report may take the executive summary to copy in as part of the Final LCA report with a reference to this full critical review report.

About the Critical reviewer

The reviewer for this report is Göran Brohammer, with history of LCA engagements since 1989, and also acts as an individual verifier for EPD as well as EPD verifications done by a certification body. More information could be found at www.extraccon.se and www.environdec.com

The method used in this review

ISO14040:2006 and chapter 7 as well as ISO14044:2006 and chapter 6 specifies what shall be covered in the review and that has been followed, see next about the review result.

The draft report was send to the reviewer for an initial review 11/4-2017, a discussion of the result from the initial review was done 12/4-2017, final adjustments was done in the version given 18/4 2017.

After correction and adjustments of the report, a final version again was send to the reviewer for a final review and closing.

The review result

The goal and scope of the LCA

PVCfreeBloodBag is a demonstration project with financial support from EU's Life+ programme. It is a cooperation between healthcare and industry to phase out harmful substances from healthcare.

The main objectives are to demonstrate that it is possible to produce a PVC-free blood bag that fulfils requirement specification and to increase demand by cooperation with European healthcare by dissemination knowledge and awareness.

As the main impact considered is exposure from toxic substances, a LCA as a tool might not be the best as its mainly handles global issues, but will in any case give increased knowledge and awareness.

The LCA study also intends to be used for external communication. Environmental communication is often complex and it's important to identify the target audience and their level of understanding of complex environmental information as a LCA result and based on that develop relevant communication strategies. Its outside the scope of this review to judge such communication strategies as the focus lies on the LCA an and its result.

Functional unit and system boundaries

Functional unit or declared unit was one set of blood bags, consisted of four bags connected with tubes.

System boarders i.e. what is included in the LCA analyze, is well described in text. The definition and presentation of data quality is fine and relevant. The criteria to be used in the comparison

between two product systems is transparent and relevant. The majority of data is from year 2014. Following issues has been discussed needed to be commented here:

- It is assumed that the product quality for the user is the same for a PVC free product vs. a PVC containing product. If that's the case in reality is however not analyzed as this was not part of the goal and scope of the study.

Data collection

The calculation is done in SimaPro and with the help of some modelling in excel, all according to normal praxis. Some data relates to the pre-study done in 2012. This could be seen as old but it was part of the study to use these data as they were. Some generic data relates to Ecoinvent 3.3 a databased often used among LCA practitioners. Site specific data was collected by the producer, which is a normal procedure. Table 4 in chapter 4 specifies the data in a transparent way. Here also could be seen data gaps and assumptions. Following issues has been discussed needed to be commented here:

- The softener in PVC has been chosen to DEHP, a substance on the reach list of substances of authorization. In a report from Karolinska Institutet in 2014 regards phthalates, is noted that there is a plan to phase out DEHP to 2015, but medical products might be out of that scope. In any case, there exists other as DIDP and DINP. It has not been part of this study to compare these and accordingly the critical review will not go deeper with this either.
- Normal processes in plastic bag manufacturing is to, as an initial step, produce a plastic film, then fold and produce the bag. The film manufacturing is normally for polyolefins, extrusion. In this study however, its noted that the PVC alternative is calendared. I cannot say that's wrong as I am not familiar will the details in that type of production, just that its then not similar as when in extrusion processes. This is however a model already used at the pre-study in 2012 and has not been changed.

Impact assessment

The impact assessment follows the classification and characterization as in normal praxis as that will be a result when using a specialist LCA tool for calculations (SimaPro). Normalization is done according to normal practice; no weighting has been done to single data results. Following issues has been discussed needed to be commented here.

- When incinerating PVC, the chlorine will create HCL in the exhaust gas. This would probably be seen as increased acidification potential in the impact assessment. However, the study has not used specific waste data from PVC in the waste incineration model, only data from average hazardous waste incineration so the difference to the PVC free alternative will be very small. In any case this just strengthen the outcome of the study.
- It is of course part of the goal and scope to compare the two types of products with or without PVC, but the study contains a lot of information connected the toxically related effects and this type of comparison is not very stringent in LCA. It's also noted at several places in the report but needs to be commented here as well.

LCA result interpretation and final considerations

The final discussions in the report builds on results in the impact assessment and is just a summary.