



**Comments of PU Europe on Management of Construction and Demolition Waste
(draft final report task 2)
Chapter 9 Material focus: Ozone Depleting Substances**

PU Europe is the European association representing the polyurethane insulation manufacturers industry.

PU Europe strongly supports efforts to minimise ODS emissions from end-of-life PU foam. The association was involved in several studies and actively contributes to the implementation of Regulation 1005/2009.

PU Europe thanks Bio Intelligence Service for the phone discussions on the ODS chapter. However, the present draft report still requires certain corrections before finalisation.

General comments:

- PU Europe had expected that the report would provide a quantitative and qualitative analysis of different end-of-life options in terms of their environmental impact (ODS destruction rate), technical feasibility and cost implications. At present, the report seems to suggest that ODS destruction with prior recovery should be worked towards although this is neither the best environmental nor economic solution.
- The report contains a number of inaccuracies regarding HCFC and HFC use and compliance with existing legislation, which we would ask to be corrected.
- Given the significant uncertainty regarding the numbers used, it would be better to work with ranges instead of worst case figures.

Specific comments:

Page 111 : Table (section “Environmental impacts”)

You should provide a CO₂eq savings range instead of a number (18,473,000 t.CO₂eq) by explaining the different estimations according to the “top-down” and “bottom-up” methods and include the real ODS average recovery rate from the foam at the end of the product life (58% for fridges).

Page 112: Section 9.1 Product description and applications

The second paragraph needs substantial corrections. HFC use in PU foam is today a niche application mainly for spray foam and discontinuous sandwich panel production. Over 90% of PU foam is blown with pentane and less than 10% with HFC. Hence, the phrasing “more and more replaced” is not correct. Wherever possible, HFCs have been replaced by pentane.

HCFCs have been banned since 2004 and are not used today. The second phrase should refer to HFCs and not HCFCs.

The last phrase refers to the question why certain producers still use HFCs. We had explained that, for reasons relating to the safety at work, spray foam cannot use pentane. Furthermore, some small producers (discontinuous sandwich panel production) still use HFCs as they cannot afford the investment in pentane-using equipment.

➤ **We would ask the consultant to correct this paragraph.**

Page 113: Section 9.2.1 Current and forecast ODS banks

PU Europe fully understands the difficulties of the consultant to accurately quantify ODS banks. The numbers proposed are therefore not contested. However, as the difference between 40% and 90% is so significant, PU Europe suggests that the consultant work with a range or an upper and a lower estimate.

Page 115: Section 9.2.2 Waste generation and treatment data

PU Europe disagrees with the statement in paragraph 2 that, for construction foams, the obligation to remove ODS depends exclusively on its technical and economic feasibility.

Article 22.4 of Regulation 1005/2009 states that “Controlled substances contained in products and equipment other than those mentioned in paragraph 1 shall, if technically and economically feasible, be recovered for destruction, recycling or reclamation, or shall be destroyed without prior recovery, applying the technologies referred to in paragraph 2.”

➤ **We would ask the consultant to correct this paragraph.**

It is true that hazardous waste facilities have to respect strict environmental standards. It is however incorrect to say that countries which allow the incineration of ODS containing foam in municipal solid waste incinerators (MSWI) do not comply with legislation.

Regulation 1005/2009 (art. 22.2) refers to annex VII of that Regulation (approved destruction technologies). For dilute sources (such as foam), the annex offers two options: municipal solid waste incineration or rotary kiln incineration.

This is also fully in line with the UNEP TEAP reports of 2005 and 2009.

Furthermore, the Waste Incineration Directive (art. 6.1) stipulates the following:

“Incineration plants shall be designed, equipped, built and operated in such a way that the gas resulting from the process is raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even under the most unfavourable conditions, to a temperature of 850°C, as measured near the inner wall or at another representative point of the combustion chamber as authorised by the competent authority, for two seconds. If hazardous wastes with a content of more than 1% of halogenated organic substances, expressed as chlorine, are incinerated, the temperature has to be raised to 1.100 °C for at least two seconds.”

As a worst case scenario, it could be assumed that 3% of the waste fed in the incinerator is ODS containing PU foam. If we estimate the content of ODS in the foam at 6%, the total share of ODS in the waste would amount to 0.18 %. This is well below the 1% limit. For rotary kiln incineration, the share would be as low as 0.01-0.03 %.

In practice, the share of ODS (the concentration of halogens) will be lower as ODS containing foam is never delivered in pure form to an MSWI. Depending on the application in the building, the combination

with other materials, the way the building was demolished / deconstructed, the storage with other materials and transport and supply conditions, there will always be other materials attached to the PU foam, or the foam will be mixed with other materials.

➤ **We would ask the consultant to correct this paragraph.**

Page 117: Section 9.3.2 Emerging techniques

As outlined above, Regulation 1005/2009 does not require recovery if this is “technically and economically” feasible. Rather it offers two options recovery or destruction without prior recovery.

➤ **We would ask the consultant to correct the second paragraph.**

Pages 118-119: Section 9.4.1 Environmental impacts

Whilst it is true that ODS emissions must be minimised at the end of the product life, PU Europe disagrees with the conclusions of this section.

Destruction with prior recovery does **not** offer the environmentally best solution. The Deutsche Umwelthilfe¹ estimates the ODS recovery rate for household appliance at only 58%. This means that almost half of the ODS is released in the atmosphere in the recovery process.

On the other hand, incinerating ODS foam in modern MSWI leads to a 99.9% destruction of the ODS². Comparing these two options is of fundamental importance when the report wants to draw sound conclusions.

A complete analysis should also provide a holistic view on all environmental impacts. For example, the small number of ODS recovery facilities would entail higher environmental impacts due to longer transport distances. MSWI are available at relatively short distances in most (but clearly not all) Member States.

As regards table 34, it should be specified whether the numbers given assume a 100% recovery rate, although this is not achieved in practice (see example above). If this was the case, the figures would be unrealistic. In any case, they should be compared with the emission savings potential for other end-of-life options, such as incineration in MSWI.

➤ **We would ask the consultant to review this section on the basis of the above elements.**

PU Europe is prepared to provide further elements to the discussion.

¹ Deutsche Umwelthilfe, Hintergrundinformation zur Pressemitteilung der Deutschen Umwelthilfe am 16.12.2009

² Co-combustion of building insulation foams with municipal solid waste, Forschungszentrum Karlsruhe for APME, EXIBA, ISOPA, 1995