

Environmental considerations arising from the use of baled tyres.

Introduction:

This study was done in response to the use of baled tyres in engineering works, e.g. road construction over soft ground (wetlands). This is a recent activity in Ireland, but it is a practice that has been in use for some years in other countries.

To complete the study 12 papers from different regions including the USA, the UK, New Zealand and the Basel Convention were reviewed in an attempt to determine the environmental implications of using baled tyres in road construction projects. The 12 papers selected for review were identified following a Barbour Index search, the USA EPA website and the Basel Convention website. Many of these papers were in themselves literature reviews so the assessment carried out is comprehensive and reflects the state of knowledge as reported in the literature.

Summary of the papers:

Initially the EA ^{2,3,4}, DEFRA ³ and the Basel Convention ¹¹ all considered the use of end of life tyres in engineering projects to be either environmentally safe or low-risk. Recently ^{3,11} they have all changed their stance to a more precautionary one. Indeed the EA no longer consider the use of baled tyres in engineering works to be a low risk activity especially in below ground applications ³. The USA EPA website references four studies on tyres ^{6,7,9,10}, two of which conclude that there is no significant environmental impact and two which are more precautionary. The US EPA does recommend their use but require authorisation¹³.

New Zealand ⁵ considers that tyres have the potential for contamination and indeed it is their research that the Basel Convention quotes in their revised technical guidelines ¹².

The current general consensus is that the use of tyre bales in engineering works is generally a low risk activity in the short to medium term, however the long-term environmental impacts of using tyres as fill material are still unknown. Several of the studies suggest that tyres can have on-site environmental impacts ^{3,6,9}. The consensus in the literature is that further studies are required.

Discussion:

Waste tyres are used for engineering purposes worldwide including use as a road base. Their use as road base appears valid from an engineering perspective: there is a British Standard for baled tyres: PAS108¹⁴. This would suggest that a blanket ban on use of baled tyres as road base should not be applied.

The recent changes in policy during 2008 by the EA and the Basel Convention are significant. The below ground use of baled tyres can have an impact on the environment, albeit only under certain environmental conditions. These site-specific conditions include high acidity, permeability of soil and contact with water. A common use in Ireland has been placing the baled tyres below the saturated zone in acidic peat bogs. Based on the review of scientific papers, I consider that there is enough evidence to suggest the potential for environmental damage from the use of baled tyres, particularly in below ground applications. Therefore careful assessment of local site conditions must be done prior to their use.

Even if, in the future, the environmental impacts of tyre bales are shown to be negligible, there is a real threat that individuals will exploit the use of baled tyres in below ground engineering works as a convenient way of landfilling tyres. Such practices have been common in the UK and are one of the principal reasons for the change in policy by the EA. It would be reasonable to assume that similar practises could happen in Ireland.

Recommendation:

I recommend the pre-cautionary principal.

Every proposed project should show there is an engineering need for the baled tyre material (i.e. as a lightweight fill) that cannot be overcome by other technical means in a cost effective way. This is to ensure the tyres are being used for a beneficial use and not simply used as landfill.

It is also necessary to ensure a level playing field in the tyre-recycling sector. These practises would be in line with the Section 60 Policy direction of May 2005¹⁵ which points out that;

“The majority of those involved in the provision of waste management services do so within the law and thus face substantial obligations and costs in order to abide by waste management controls aimed at protecting the environment and human health and they should not be put at a competitive disadvantage by illegal operators.”

These concerns are sufficient to classify the material as waste in that special environmental precautions are required in their use - the leachate issues would not be of concern if stone were used. This being the case, the need for special environmental protection measures arises and I consider the baled tyres to be waste and any use in engineering applications would be subject to authorisation as a waste recovery or disposal activity. Authorisation would also take any concerns about pretence recovery into account.

Type of authorisation

The nature of authorisation required can be clarified under the Article 11 process set out in the waste permitting regulations¹⁶. Use in “above ground” works may be acceptable as a non-waste activity. If authorisation is required then the following apply:

- Private operator: Waste Facility Permit Class 10 for up to 50,000 tonnes.
- A Local Authority: a Licence under Part V of the Waste Management Acts 1996-2008.

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