

CEEES workshop on biodegradable polymers 3 November 2005

The CEEES workshop, *Biodegradable Polymers – Where are the Limits*, was a successful event. On a show of hands at the end, attendees made it clear that they wanted another such event in a year's time. It provided a useful opportunity for an exchange of views and information and will I believe be useful in de-fusing (though not eliminating) future conflict.

The key points that I took from the meeting were as follows:

1) Duration of the tests

EN 13432 provides for 90% disintegration within a maximum of 6 months. Is the standard too difficult or too easy to comply with?

- It is illogical that natural materials cannot comply with the standard. "Nature's litter" (straw, leaves or wood) takes between 10 and 100 years to degrade.
- On the other hand, if the standard were made easier to meet, would there be a danger that materials that are not really compostable would comply?
- The Commission already believes that the standard is too weak, and believes that 3 months would represent a more realistic timescale for disintegration than the 6 months in EN 13432 (*outside the meeting, Luca Marmo of DG Environment confirmed that this is still their view*).

There is a proposal on the table to amend the standard to 90% disintegration within a maximum of **12** months. As a compromise, extension of the timescale could be accompanied by a reduction of the temperature at which the tests are carried out – from 58° to 38°.

Temperature can have a big effect on the rate of biodegradation, but different microbes operate efficiently at different temperatures so high temperature is not always the answer. Under EN 13432, no information is collected on low-temperature biodegradability.

One view expressed was that if the test duration were extended, there would be an increase in the difference between laboratory conditions and a real composting environment. In effect, it would be left to soil degradation to get rid of the "compostable" materials, and EN 13432 would just become a test of inherent biodegradability.

It was agreed that the fundamental requirement is for the resulting compost to be acceptable to the potential end-user:

- Some strongly argued that the compost would not be acceptable if it contained visible plastic fragments, and that this could discredit the entire plastics industry.
- Others argued that a distinction needed to be made between gardeners, who would attribute great importance to visual quality, and farmers and professional growers, who would be more interested in functional performance than appearance. Plastic fragments actually increase the amount of carbon in the soil, and carbon needs to be replenished if the soil is not to become sterile.

It was pointed out that composters want to be strict about what they accept – they do not want to take the risk of using material which will contaminate their products. If the tool they currently use – a visual check – is taken away, they need to be provided with another form of assurance. (*There were no composters present at the workshop, and it was agreed that special efforts would be made to encourage them to attend next year.*)

2) Reference materials

If the reference material for the tests were changed from cellulose to lignite-cellulose, PE would be degradable. However, the standard was intended to relate to collected household waste, which does not contain much recalcitrant material.

It had been proposed that BSI should develop a standard for oxo-biodegradability, based on lignite-cellulose as a reference material. This could be used alongside EN 13432, which oxo-biodegradables are not able to meet.

However, there was an objection that this British standard would conflict with CEN rules, as it would cause confusion. The question should be, *what level of biodegradability do we expect?*

3) Litter

One speaker argued that too much attention was being given to compostability, since even wood would not comply with EN 13432, and more should be given to the value of oxo-biodegradables as a cheap and safe way of combatting litter.

However, most attendees did not believe that it was appropriate to market biodegradables on this basis.

4) Biodegradable materials in the recycling stream

One producer claimed that a batch of PET for recycling could contain up to 1% of their biodegradable material without affecting its properties. Modern sorting equipment can remove 97.5% of the biodegradables from the stream.

We were told that biodegradables are still a niche product – 250,000 tonnes versus 60 million tonnes of LDPE, perhaps rising to 500,000 tonnes of biodegradables by 2010. Biodegradables represent no more than 10% of all plastics produced in Europe. Thus, contamination of recycling streams may not be a major issue.

It was argued that there should be no problem using biodegradables in plastic lumber provided the right stabilisers are used. However, that does not appear to be widely known among US recyclers, who have expressed concern about feedstock contamination – and packers and fillers are keen to avoid extra additives and materials being added to existing waste streams for fear of jeopardising recycling systems.

It was also pointed out that a proportion of biodegradables will inevitably end up in landfill, where they will generate methane.

5) Marketing claims

Concerns were expressed about exaggerated or misleading marketing claims.

An Irish retailer wanted to label his bags with “carrier bags last a million years unless biodegradable”, but everybody’s favourite was a Polish carrier bag bearing the words “this bag will start to disappear by December 2005”!

A producer of biodegradable plastics said that some retailers have resisted guidance on claims, and has consequently sought written indemnities to ensure that he is not made responsible.

California bans claims of biodegradability unless the material complies with a recognised standard, and this idea received some support at the workshop.

It could be argued that “this material complies with European standard EN 13432” is the only meaningful claim, because it is verifiable (though those who believe that the existing standard is too restrictive would probably not agree). The German waste management organisation Interseroh, which is developing composting systems, believes that the standard provides a reliable and workable framework, based on years of work, and that this would only change if there was clear evidence that the standard was defective.

6) Certification

A global network for certification is developing, with mutual recognition between the German, Japanese and US certifiers. Once a material has been certified by one, the others receive the documentation, review it and certify as appropriate.

Memoranda of Understanding are being developed with other Asian countries. The CEN and ISO standards and the ASTM guidelines D 6954 (May 2004) form the basis of these agreements.

7) Compostability and biodegradability

We were reminded that these two terms do not mean the same thing. Composting is only one option for biodegradable materials.

PE was originally made in Brazil and India from sugar. Petrochemicals are now used because they are less costly, but how long will this remain the case?

One speaker asked what the advantage was of converting polymers to make them compostable – why not leave them as they are? The answer was to divert waste from landfill in line with EU policy. But why make a material compostable if it conflicts with other waste streams? – stick to materials that are compatible with other waste streams and acceptable to composters.

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