

HSAC comments

British Standards Institution Nanotechnology Standards Documents

At the 10th meeting of the Hazardous Substances Advisory Committee (HSAC) the committee were asked to comment on the following British Standards Institution (BSI) documents:

- Nanomaterials and nanotechnology-based products – Guide to regulation and standards (PAS 137:2013)
- Nanotechnology – Guidance on physicochemical characterization for manufactured nano-objects submitted for toxicological testing (PD ISO/TR 13014:2012)
- Nanotechnology – Compilation and description of toxicological screening methods for manufactured nanomaterials (PD ISO/TR 16197:2014)

The HSAC considered these documents in light of their own opinion on nanoscience which was published in 2012:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/208644/hsac-opinion-nanoscience.pdf

The committee felt that the BSI documents were useful as an encyclopaedia that provided the reader with a basic overview of important aspects to consider in the field of nanotechnology. It was noted that the definitions included in documents PD ISO/TR 13014:2012 and 16197:2014 were very clear. The documents provided some helpful points for a lay person working in industry and looking to start using manufactured nanomaterials.

However, the documents were more developed in some areas than others and due to a lack of detail provided they could not be used by those wanting to carry out a specific study. While document PD ISO/TR 13014: 2012 told the reader that methodologies for characterising manufactured nanomaterials were available, the limitations of these methodologies were not discussed. There was also no mention of the importance of using more than one characterisation method, something which was emphasised in HSAC's opinion.

Document PD ISO/TR 16197:2014 focused on in vitro and in vivo testing of manufactured nanomaterials and the committee were surprised that only one page had been given to methods for toxicological screening related to the environment. It was noted that this document looked at the short term toxicity of nanomaterials as opposed to the long term and that for nanotechnology the focus should be on long term effects. There was also no mention of the importance of considering how nanomaterials could interfere with toxicity assays which required extensive control experiments.

The major issue of nanomaterials entering the environment through disposal down the drains was not covered in enough detail in document PD ISO/TR 16197:2014. Nanoparticles entering the drains differ from the form in which they are found in sewage sludge (e.g. silver nanoparticles become coated with sulphur) and this transformation product is the form of the nanomaterial that should undergo toxicity testing rather than the pristine nanomaterial. This issue should have also been discussed in PAS 137:2013 where the focus was very much on factory waste, with no reference to the release of nanomaterials into the environment once consumers used products that contained nanomaterials. The lifecycle of these products should also be taken into consideration with various methods being used to dispose of products containing nanomaterials through municipal waste management systems, although the committee noted that the persistence of nanomaterials could not be determined if they could not be detected in the environment.

There was a general concern that the science in this area was still developing and therefore publishing nanotechnology standards could be seen as premature. The committee felt that the documents were addressing issues that were easy to address. They were disappointed that the standards showed that progress had not been made since the Royal Commission on Environmental Pollution report on nanotechnology was published in 2008.

The Secretariat will finalise the committee's comments and forward them to BSI.

As a result of the discussion of these BSI nanotechnology standards documents the HSAC have decided to update their own opinion piece and a sub-Group was formed at the meeting to take this work forward.